

THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 81: No. 5 New York, Thursday January 30, 1908

\$5.00 a Year, including Postage.
Single Copies, 15 Cents.

Reading Matter Contents.....page 397
Alphabetical Index to Advertisers " 193
Classified List of Advertisers " 183
Advertising and Subscription Rates " 192

REED F. BLAIR & CO.

FRICK BUILDING, PITTSBURG, PA.
STANDARD CONNELLSVILLE

COKE

FOUNDRY FURNACE CRUSHED

The American Mfg. Co.
Ropes and Twines
65 Wall Street, New York

BRISTOL'S Steel Belt Lacing



SAVES
Time, Belts, Money.
Greatest Strength
with Least Metal
Send for Circular Q and Free Samples.

THE BRISTOL CO., Waterbury, Conn.
NEW YORK and CHICAGO

BRAIDED CORD

SAMSON CORDAGE WORKS
Boston, Mass.

TURNBUCKLES



Cleveland City Forge and Iron Co., Cleveland, O.

TURNBUCKLES.



MERRILL BROS.
465 to 471 Kent Ave.,
Brooklyn, E. D., N. Y.

FORGINGS

Pilling & Crane
Girard Building, Phila.
Machemey Bldg., Pitts'g
Empire Bldg., New York

LUFKIN TAPES and RULES

MADE IN AMERICA
THE BEST IN THE WORLD

and
THE LUFKIN RULE CO., Saginaw, Mich., U.S.A.
New York, London, Eng., Windsor, Can.

There may be some substitute for

HIGH QUALITY

—but so far it has not been discovered.

See
AMERICAN
SHEET & TIN PLATE
COMPANY'S
Ad. on Page 15.



U.M.C.
METALLIC CARTRIDGES

The leading boys' papers—"Youth's Companion," "American Boy," "Star Monthly," etc., carry in season U. M. C. advertising. For years boys have been taught to call for "U" Cartridges. They specially prefer U. M. C. .22 ungreaed as they don't soil the pockets. Are you well stocked?

U. M. C. .22s are as well known to boys as U. M. C. Shot Shells to men.

The
Union Metallic Cartridge Co.
Bridgeport, Conn.
Agency, 313 Broadway, New York City.

WATER TUBE BOILERS The Babcock & Wilcox Co.
See page 55 85 Liberty Street
New York

"CAPEWELL" HORSESHOE NAILS
The Best for All Classes of Work

For Running Horses

For Trotting Horses

STRONGEST BLADES



KEENEST POINTS

For Work Horses

For Resetting

For Ice Work

Made by

The Capewell Horse Nail Co., Hartford, Conn., U. S. A.

THE LARGEST MANUFACTURERS OF HORSE NAILS IN THE WORLD

JENKINS '96 SHEET PACKING



The Original Unvulcanized Packing. Suitable for all steam joints. Not only does it make a tight joint quickly, but it makes a joint that *will last*. Made in sheets, and also, to order, in GASKETS cut to any size or shape. All genuine is stamped with Trade Mark as shown in the cut, and is guaranteed.

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London.

"Swedoh" Cold Rolled Steel is unexcelled for Drawing and Stamping
THE AMERICAN TUBE & STAMPING COMPANY
(Water and Rail Delivery) BRIDGEPORT, CONN. SEE PAGE 23



MAGNOLIA ANTI FRICTION METAL

The Standard Babbitt of the World

We manufacture everything in the Babbitt Line.

MAGNOLIA METAL CO.



New York: 115 Bank St. Chicago: Fisher Building. Montreal: 31 St. Nicholas St.

**NOW
IS THE TIME**

for buyers of special
qualities to test our

SHEET STEEL

WE KNOW it is far
superior in finish and in
drawing quality to anything
obtainable elsewhere.

Follansbee Brothers Co.
Pittsburgh

AUTOMOBILE
FURNITURE
METAL DOOR and
ENAMELING

STEEL

DRAWING QUALITIES
A SPECIALTY

BRASS { SHEET
ROD
WIRE

COPPER { SHEET
ROD
WIRE

**GERMAN
SILVER** { SHEET
ROD
WIRE

LOW BRASS, SHEET BRONZE,
SEAMLESS BRASS AND COPPER
TUBING, BRAZED BRASS AND
BRONZE TUBING : : : : :

Waterbury Brass Co.
WATERBURY, CONN.

99 John St., New York.

Providence, R. I.

**Bridgeport Deoxidized Bronze
& Metal Co.**

BRIDGEPORT, CONN.

**Phosphor and Deoxidized
Bronze**

Composition, Yellow Brass and Alumi-
num Castings, large and small

The Plume & Atwood Mfg. Co.

Manufacturers of

Sheet and Roll Brass

and

WIRE

Printers' Brass, Jewelers' Metal,
German Silver and Gilding Metal,
Copper Rivets and Burrs

Pins, Brass Butt Hinges, Jack Chain Kerosene
Burners, Lamps, Lamp Trimmings, &c.

279 Broadway, NEW YORK

Room 508 Heyworth Building, East Medi-
son St., CHICAGO, ILL.

Rolling Mill Factories
THOMASTON, CONN. WATERBURY, CONN.

SCOVILL MFG. CO.

MANUFACTURERS OF

BRASS, GERMAN SILVER,

Sheets, Rolls, Wire Rods,

Bolts and Tubes,

Brass Shells, Cups, Hinges, Buttons,
Lamp Goods,

Special Brass Goods to Order.

FACTORIES:

WATERBURY, CONN.

DEPOTS:

NEW YORK CHICAGO BOSTON

Henry Souther Engineering Co.

HARTFORD, CONN.

Consulting Chemists, Metallur-
gists and Analysts.

Complete Physical Testing Laboratory.
Expert Testimony in Court and Patent Cases.

Arthur T. Rutter & Co.

256 Broadway
NEW YORK

Small tubing in Brass, Copper,
Steel, Aluminum, German Silver,
&c. Sheet Brass, Copper and
German Silver. Copper, Brass
and German Silver Wire. Brazed
and Seamless Brass and Copper
Tube. Copper and Brass Rod.

"PHONO-ELECTRIC"

WIRE. "IT'S TOUGH."



**TROLLEY,
TELEPHONE
and
TELEGRAPH
LINES.**

Mills
Bridgeport
Conn.

BRIDGEPORT BRASS COMPANY,
Postal Telegraph Bldg.
Broadway and Murray St., New York



**PHOSPHOR-BRONZE
GERMAN SILVER**

**THE RIVERSIDE
METAL CO.**
RIVERSIDE, N. J.

Matthiessen & Hegeler Zinc Co.

La Salle, Illinois.

SMELTERS OF SPELTER

AND MANUFACTURERS

SHEET ZINC AND SULPHURIC ACID

Special Sizes of Zinc cut to order. Rolled Battery Plates.
Selected Plates for Etchers and Lithographers' use.
Selected Sheets for Paper and Card Makers' use.
Stove and Washboard Blanks.

ZINCS FOR LECLANCHE BATTERY.

**BRASS FOUNDERS
FINISHERS J.J. RYAN & CO.**

105-109 So. Jefferson St., Chicago.

Best Bronze, Babbitt Metals, Brass and Aluminum CASTINGS
On Short Notice

GERMAN SILVER | NICKEL ANODES
THE SEYMOUR MFG. CO. - - SEYMOUR, CONN.

Brass, Bronze, and Copper

HENDRICKS BROTHERS

Proprietors
of the

Belleville Copper Rolling Mills,

Manufacturers of Braziers' Bolt and Sheathing

COPPER

COPPER WIRE AND RIVETS

Importers and Dealers in

Ingot Copper, Block Tin, Spelter, Lead, Antimony, etc.
49 CLIFF ST., NEW YORK.

THE IRON AGE

New York, Thursday, January 30, 1908.

The Greene Self-Dumping Car Haul.

A New System of Handling and Dumping Mine Cars.

The original purpose out of which grew the system herein described, did not include anything more than hoisting an empty car from its full dumping position on a plain horn dump directly to an overhead track, using a haul of some sort to accomplish this end. It became manifestly impracticable, if not impossible, to use an ordinary single chain haul to do the work, so two chains were used, placed either side of the dump, having two pipe cross bars attached at equal intervals in their length. When the horn dump was at its full dumping inclination, the receiving end of the dump registered with a track directly above the loaded track, and one of these pipe cross bars would engage with the low end of

chain of 24 in. pitch, with $1\frac{1}{4}$ in. pins. The cross bars are of double extra heavy wrought iron pipe 4 in. in diameter, with a welded and pinned stub in each end. In addition to being attached to the chains at intervals of 36 ft., the cross bars run on wheels turning on the stubs. The cross bars on this particular haul engage with lugs placed on the bottoms of the mine cars, similar to an ordinary single chain haul, but in later hauls the lugs are dispensed with entirely, the cross bar lifting the rear end of the mine car bodily, supporting it up and down the slope and through all its evolutions. By engaging the cars in this way, it is practically impossible for them to get away and cause the wrecks and



Fig. 1.—The Trestle Approach to the Tipple, Showing Loaded Cars on the Lower Runway and Empty Cars on the Upper Runway. The Section of the Lower Runway Track on which the Loaded Car Is Standing Swings Down to Register with the Track on the Ground When Taking Supplies Into the Mine.

the empty mine car and push it up and over a knuckle to the upper track. This was rather crude, but it served the purpose of reducing the size of the tipple required and eliminated some of the men usually employed.

A proposition then came up embodying a slope to coal lying about 35 ft. below the surface. It was decided to try applying this double chain and cross bar idea with an upper and lower track, modified to suit the conditions imposed. The drawing, Fig. 2, shows the solution. This, as it finally worked out, developed into a conveyor of the endless double chain variety, without the buckets, but with two additional parts, a swing lift transfer and a track gate, each a simple one piece pivoted member operated positively. These are described later.

A description of this car haul conveyor as installed should naturally start by showing wherein it differs from an ordinary car haul, to suit the same conditions. Possibly the most marked distinctions on first glance are the substituting of double chains, with cross bars to engage the mine cars, for the usual single chain with dogs; and in putting one track above the other, instead of placing the empty and loaded tracks side by side or parallel. These features are apparent in Figs. 1 and 3, which show photographic views of the parts above ground.

The chain used in the haul is a Scranton drop forged

delays associated with a single chain haul where everything depends upon a dog staying put against a lug. Then again, by merely elevating the cross bar wheel tracks in relation to the mine car tracks, a car can be moved in a position to prevent coal from falling off on a slope pitch which would be considered prohibitive with an ordinary haul.

It will be seen from Fig. 4 that there are two tracks and a chain guide on both the upper and lower runways of the haul. One track, the inside one, is for the mine car wheels, and on either side of this, but using the same track center, are the rails of the cross bar wheel track, and outside of the latter are the chain guides—channels or plain, flat plate for the chain rollers to run on. A 12-lb. rail was used for the cross bar wheel tracks, and a 40-lb. rail for the mine car tracks. The chain guides are either 8-in. channels or $6 \times \frac{1}{4}$ in. plates. In this haul channels were used.

The chains track over head and tail sprockets, as in any endless double chain conveyor, and the driving mechanism is practically the same only larger. In the plant of the Wheeling Valley Coal Company illustrated, the driving sprockets at the head of the haul are solid steel castings 10 ft. pitch diameter. The driving gears attached to these sprockets, are solid steel castings, 11 ft.

in diameter, 8-in. face, driven by a train of cut steel gears, providing a reduction of about 300 to 1 from the motor speed.

A 75-hp. motor does the driving of both the car haul and the feeder at the bottom. When running under normal full load the motor is handling eight loaded cars, 10,000 lb. each, maximum, and eight empty cars, on a

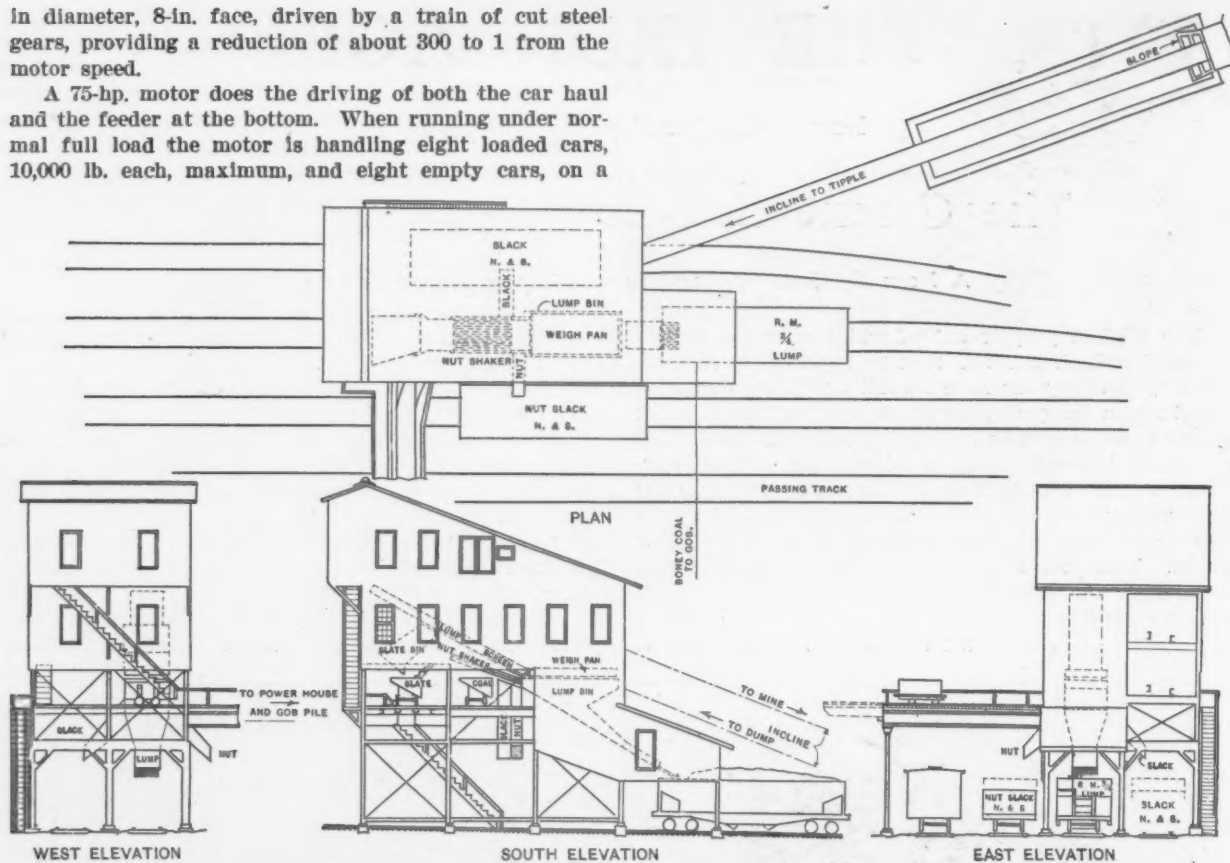


Fig. 2.—The General Arrangement of the Tipple and Car Haul Designed for the Wheeling Valley Coal Company, Lafferty, Ohio, by F. C. Greene, Cleveland.

23 deg. slope, besides operating the feeder, which pulls 40 cars on a $\frac{1}{2}$ per cent. grade in favor of the loads. The maximum load on the motor occurs when the lower runway of the haul has its full quota of eight loaded cars with no empty cars on the top runway, and the feeder full. The balancing action of the empty cars

against the loaded ones, when the empty runway is full, reduces considerably the power required.

It is rather a difficult matter to describe just how the loaded car is dumped and the empty car transferred from the lower to the upper runway at the head of the haul, in the tippleshed frame, because no one operation occurs

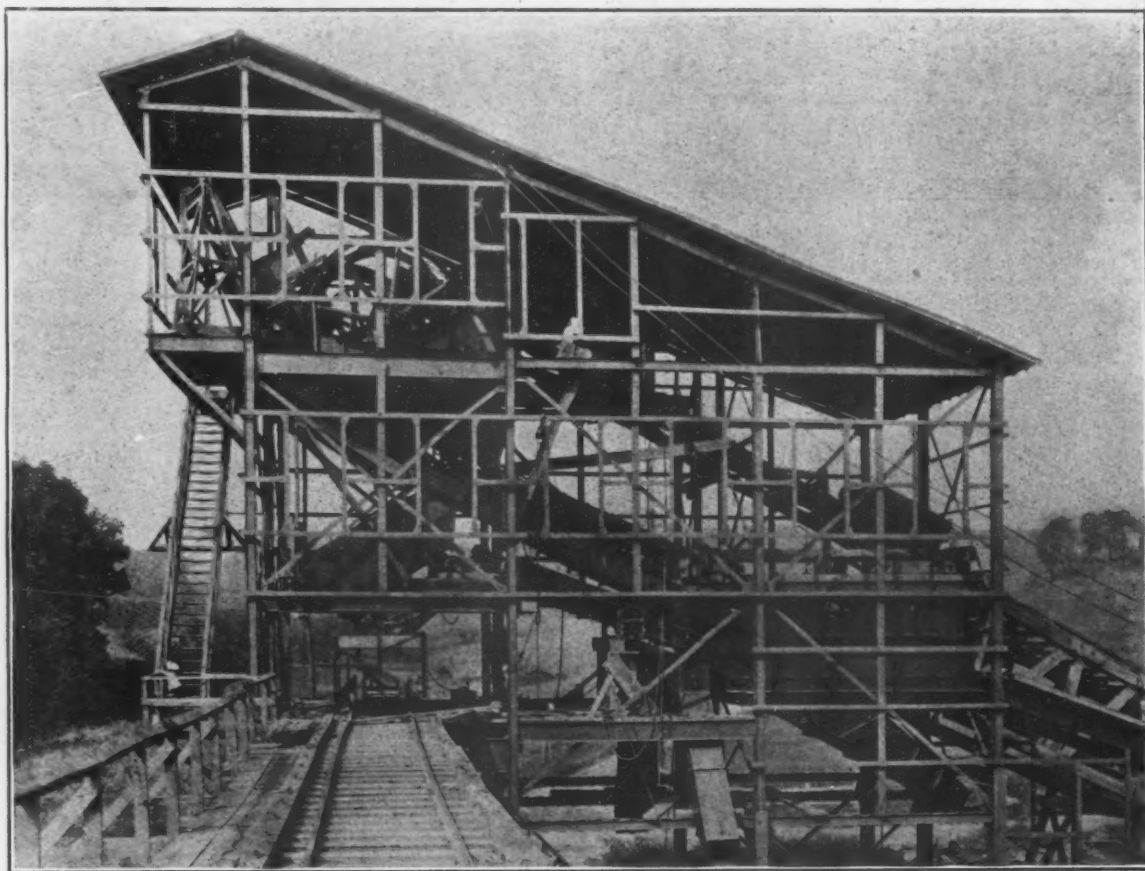


Fig. 3.—Side View of the Tipple Head Frame, Showing the Dumping Mechanism at the Top of the Haul. An Empty Car Has Just Been Placed on the Upper Runway and the Swing-Lift Transfer is Registering with the Lower Runway Ready to Receive the Car Just Entering Between the Driving Sprockets.

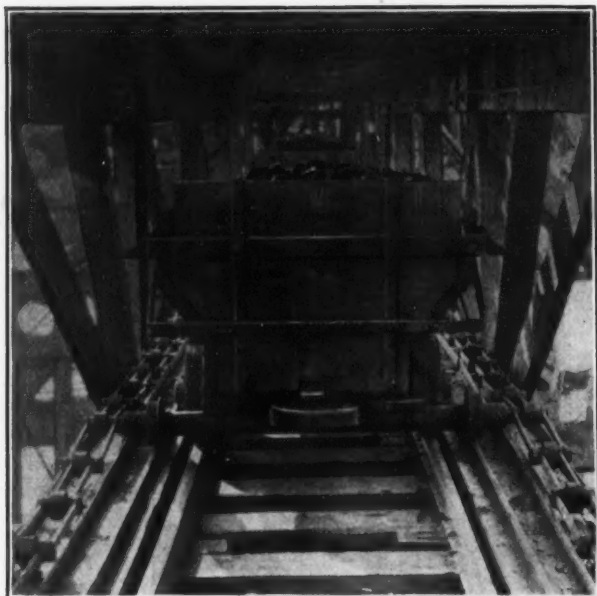


Fig. 4.—View Looking Up the Lower Runway of the Trestle Approach, Showing the Tracks and Chain Guides and a Cross Bar Pushing a Loaded Car. The Lugs on Each Side of the Lift-End Gate of the Car Are for Raising the Gate When the Car Is Over the Dump Plate.

singly. The dumping action is entirely dissimilar to that associated with present day devices. It occurs while the car is in transit. The mine car, one of the usual lift-end gate type of three tons capacity, is taken up the lower runway of the slope with the end gate facing down or toward the mine. A small lug is fastened on each side of the lift-end gate, and when the car has reached a position directly over the dump plate in the tippie, these lugs contact with a suitably shaped set of rubbing plates placed either side of the car, as shown in Fig. 5, which causes the mine car door to open wider and wider as the car proceeds further up the slope. As soon as the car door starts to open, the normal pitch of the slope causes a partial discharge of the coal from the car. The full discharge is effected by the car door opening to its full extent, and the pitch of the car increasing from 23 to 60 degrees. This increase of pitch is attained gradu-

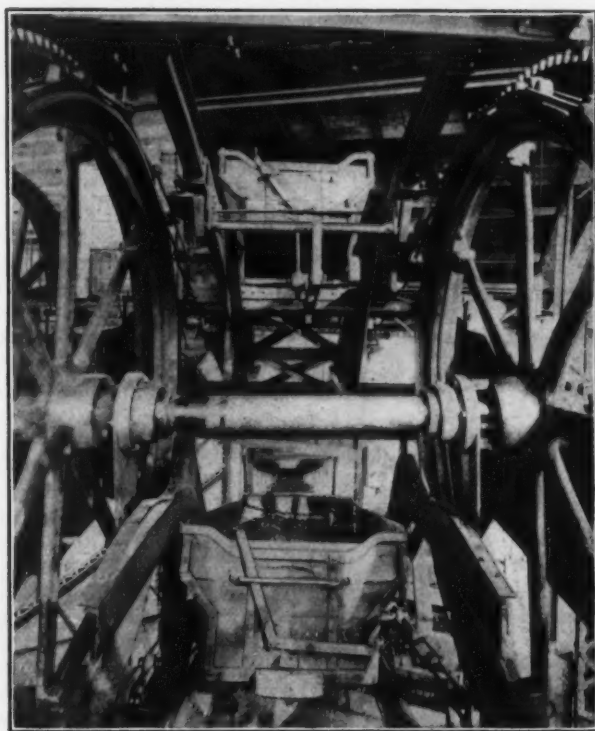


Fig. 5.—View of Dumping and Transferring Mechanism at the Top of the Haul, Looking Down the Slope from the Swing-Lift Transfer. Shows the Door Lifter Guides on Each Side of a Loaded Car on the Lower Runway. The Swing-Lift Transfer Is Latched in Register with the Upper Runway.

ally, as is also the discharge of the coal, by the cross bar pushing the car on the swing lift transfer, forming part of the haul mechanism at the top. Put another way, the car is gradually drawn from under the coal, producing a spreading action of the coal over the screens.

The swing-lift transfer, Fig. 6, is a single pivoted member, the free end of which describes an arc when it is lifted by a cross bar from its normal position in register with the lower runway, to register with the upper runway. It again describes the same arc, only reversely, when the lift drops from the upper to the lower runway.

Taking up again the movements just after the car is on the swing-lift transfer, the mine car door is wide open and the wheels on the cross bar, pushing this particular car, have run under the horns attached to the lift, as shown in Fig. 7. As soon as the cross bar starts on its travel around the driving sprocket, the mine car door starts to close, the car moves a little further up on the swing lift transfer, and the lift itself, together



Fig. 6.—View of the Swing-Lift Transfer, Showing the Cage for Receiving the Car.

with the empty car, starts to raise. When the cross bar has reached the furthest point up and out on the circumference of the driving sprockets, the mine car door is fully closed, and the cross bar, having passed this point, the mine car starts to run forward on the swing lift. By the time the lift registers with the upper runway the cross bar is about ready to leave the horns on the swing lift transfer, and the car, now actuated by gravity, is ready to follow the bar off the lift and down the upper runway of the slope. However, the cross bar does not leave the horns on the swing-lift transfer, nor does the car run off, until the free end of the lift is latched in register with the upper runway. This being accomplished, both the car and the bar perform the operations mentioned, and the instant the car is clear of the swing lift transfer the cross bar trips a trigger, which releases the lift latch, allowing the lift to resume its normal position in register with the lower runway, ready to receive another car. This swing lift transfer is counterbalanced so that the shock in dropping from the upper to the lower runway is very slight. In fact, this slight shock is the only thing that disturbs the absolutely smooth movements of the haul.



Fig. 7.—View Showing a Cross Bar Under the Swing-Lift Transfer Horns, Raising the Lift as the Bar Travels Around the Driving Sprockets.

The many varying movements are so intermingled and so seemingly dependent upon one another that it might be inferred that the apparatus is exceedingly complicated. This is not so, however. The chain is bound to travel its course around the head sprockets, and the swing lift transfer is bound to raise as the cross bars engage the horns. All the other movements are dependent upon these two simple positive movements.

The haul at the bottom is on a par for smooth, easy action and simplicity of moving parts with the top. The loaded cars are positively fed into the haul one at a time by the feeder, and in such a manner as to render it practically impossible for a cross bar traveling around the tail sprocket to collide with a car and do damage.

The feeder, which may be seen in Fig. 9, is a single chain running in the center of the loaded track, with two tilting dogs attached at equal intervals in its length. The dogs engage the lugs on the bottom of the cars, and while one dog is hauling the entire loaded trip along, the other

one, in front, is taking a detached loaded car and pushing it into the haul, immediately following a cross bar. This loaded car stands in a pocket at the foot of the haul, until the next cross bar comes along, when it resumes its travel up the slope. Meanwhile another load is being fed into the haul in the manner previously described. The feeder is operated by an auxiliary double chain and gear arrangement attached to the tail sprockets of the main haul. The rate of travel of the feeder thus bears a positive ratio to the main haul rate of travel.

The question has no doubt arisen as to how the cross bar, which straddles not only the mine car track, but also the cross bar wheel track on both the lower and upper runways, is able to get through the upper runway tracks, at the foot of the haul. This is made clear in Fig. 8. The cross bar cannot slip away from the lug on the car, in the manner a dog does on a single chain haul, as the mine car wheels would still strike the cross bar. It is, therefore, necessary to stop the mine car, to allow

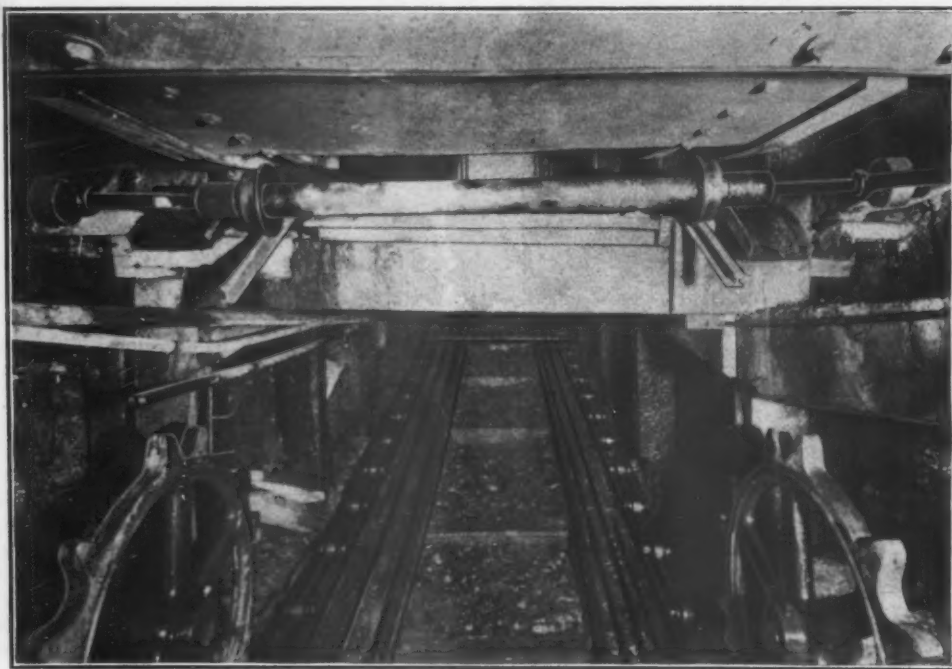


Fig. 8.—View Showing a Cross Bar Just Coming Through the Track Gate at the Bottom of the Upper Runway. The Sprocket Wheels Shown Are Idlers.

the cross bar to run away from the lug and get through the track before the car is released, something after the order of a flying switch on a railroad. This operation is effected by no more complicated means than a single piece pivoted track gate that lifts in a vertical direction, the free end of which engages with the tread of the mine car wheels, forming the car stop. The cross bar operates this track gate in a manner similar to the way it operates the swing lift transfer at the top.

The track gate is built up of a $\frac{3}{8}$ -in. plate, having a short section of mine car track attached, with a hinge at one end. The plate is sufficiently wide to accommodate two horns placed either side of the mine car track, and of a gauge to correspond with the gauge of the cross bar wheels. The horns are shaped so that when a cross bar on its travel down the slope, runs under them, they raise the track gate, and consequently the mine car tracks, making a sufficient aperture for the bar to pass through. When the raised or free end of the mine car track engages the tread of the car wheels, the car is momentarily stopped, until the cross bar gets through the aperture. Then the gate drops back to its normal position, permitting the empty car to run over the gate and on to the empty storage.

As will be noticed, the only additional parts needed in this conveyor car haul not found in the ordinary con-

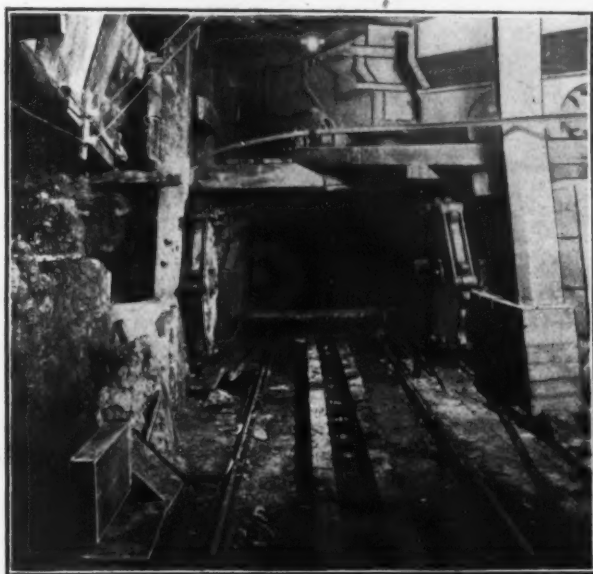


Fig. 9.—View at the Foot of the Haul, Showing the Tail Sprockets on the Main Haul and the Feeder Running Between the Rails on the Load Track, with Empty Cars Running Around to Storage from the Upper Runway.

veyor, are the swing lift transfer and the track gate. Both are single piece pivoted members, operated positively by the cross bars.

This upper and lower runway idea of the conveyor system can be applied with an efficiency and economy in handling and dumping mine cars greatly in excess of that possible with the parallel track system. Dumps have been evolved that in addition to controlling the dumping of the coal absolutely, transfer the empty cars from one track to the other. These transfer dumps are actuated either by steam or gravity, or both, and handle the empty car without the need of any auxiliary tracks, kickbacks or switches.

The car haul conveyor, or self-dumping car haul, as it is called, serves either slope or incline operations equally well, and at a pitch in either, that would be prohibitive with the ordinary single chain haul. It accomplishes the dumping into storage bins or tippie screens, or both, the receiving of the contents of the storage bins and the discharging of them into the tippie screens, with as much ease as in handling the loaded car direct from the mine to the tippie. Even in shaft operations, the upper and lower track system may be applied, leading directly into the cages, rendering unnecessary the usual car lifts, hauls, &c., for handling the empty cars at the shaft bottom.

The slopes are all double height instead of double width, to accommodate the upper and lower runways, and the trestles are all double decked instead of double tracked. The excavation for the double height slope is no greater than for the double width, and it is easier to excavate the former than the latter, for the reason that a man can work faster and to better advantage with plenty of head room than he can stooping or lying down. In the trestles there is less width to support and a consequent saving in supporting material. The tipples are smaller because it is not necessary to support additional tracks, kickbacks, switches, &c., in addition to the dump. Just sufficient structure is needed to properly support the dumps. There is no storage room required with the self-dumping car haul, thereby eliminating considerable trestle expense, in addition to the saving made in the small tippie.

Possibly the most attractive and valuable feature associated with this new system, outside of the safety, absolute control and material saving features, is the saving in labor expense. At the plant of the Wheeling Valley Coal Company the weighman operates the haul and a boy at the bottom takes care of the feeder and uncouples the loaded trip. These two can do all the handling and dumping for an output of considerably over 2000 tons per day of 8 hr.

This self-dumping car haul, or conveyor car haul, as you like, is even superior to a bucket conveyor for handling the output of a mine working in connection with the mine cars, as it takes the original package—the loaded mine car—and dumps the contents direct into the tippie, thereby saving additional handling, with its consequent breakage.

The plant of the Wheeling Valley Coal Company is located at Lafferty, Belmont County, Ohio, on the Cleveland, Lorain & Wheeling division of the Baltimore & Ohio Railroad. The self-dumping car haul installed at this plant was erected by the C. O. Bartlett & Snow Company, Cleveland, Ohio, in accordance with plans and specifications furnished by F. C. Greene, mining engineer, Republic Building, Cleveland, Ohio. All apparatus mentioned or described is fully protected by United States and foreign patents, issued or pending.

A Society for the Prevention of Accidents.—A large and exceedingly enthusiastic meeting was held at Sharpsville, Pa., on the evening of January 22 for the purpose of considering the advisability of organizing a national society for the prevention of accidents. The movement had originated with Thomas D. West of that place. After a brief address by Rev. Clarence J. Harris, who acted as chairman for the evening, Mr. West was introduced, and delivered a most exhaustive address concerning the formation of societies for the prevention of accidents. He was followed by a number of other persons who expressed in strong terms their feeling that a movement of this kind should be started. An organization was then effected as follows: President, Thomas D. West; vice-president, Samuel Dunham; secretary, Rev. C. J. Harris, and treasurer, Frank Pierce. It was decided that the organization should be national as well as local, and that the officers should endeavor to interest the country in a movement to organize like societies. Mr. West is now actively engaged in a campaign for the development of national interest in this matter, which he regards as one of urgent necessity.

Bradstreet's statistics of business failures in the United States in 1907 show that 7 houses out of every 1000 in business failed last year, as against 14 out of every 1000 in 1893, and 9 in 1873. The percentage of 1907 was lower than in any year of the past decade, except 1906, whereas the percentage of 1893 was the largest in a generation. In actual liabilities last year's failures broke all records, the total of \$383,700,000 comparing with \$127,200,000 in 1906, \$105,500,000 in 1902, and \$382,100,000 even in 1893. The ratio of total assets to total liabilities among the failed firms of 1907 was 75 per cent., the largest on record. In 1906 it was only 50 per cent., in 1893 it was 60.6 per cent.

The Gridley Multiple Spindle Automatic.

The multiple spindle turret lathe herewith illustrated is of the type that manufactures automatically from bar stock finished cylindrical work, its range of production being up to $1\frac{1}{8}$ in. in diameter by 6 in. long. The design contains a number of radical changes from what has previously been considered standard practice in this class of machine. The builder, the Windsor Machine Company, Windsor, Vt., already has on the market a single spindle automatic known as the Gridley automatic turret lathe, and while the new machine can hardly be regarded wholly as an evolution of its predecessor, there are certain features in common which will be recognized by those who are familiar with the older one. Both were designed by George O. Gridley of the company.

Briefly, the characteristic features of the machine are as follows: A nonrotating tool slide mounted upon the

other operations may be arranged, as desired. All the operations are accomplished simultaneously, and consequently the time required to manufacture a finished piece and cut it off is only the time of the longest operation plus the time necessary to return the tool slide, revolve the spindle cylinder and bring the tools back to their cutting positions. The spindles, which have the usual collet and stock pusher, are driven by the pulley B, Fig. 1 (a, Fig. 3), keyed to one end of the driving shaft b, Fig. 4, which runs through the center of the spindle carrying cylinder c. The driving shaft carries at its other end a gear, d, meshing with a gear, e, on each of the spindles, which run constantly in one direction without stopping or reversing for the purpose of threading, that operation being taken care of by the threading mechanism located at one spindle position, instead of providing each of the spindles with frictions or clutches as commonly employed in this type of tool.

In this connection it should be emphasized that the

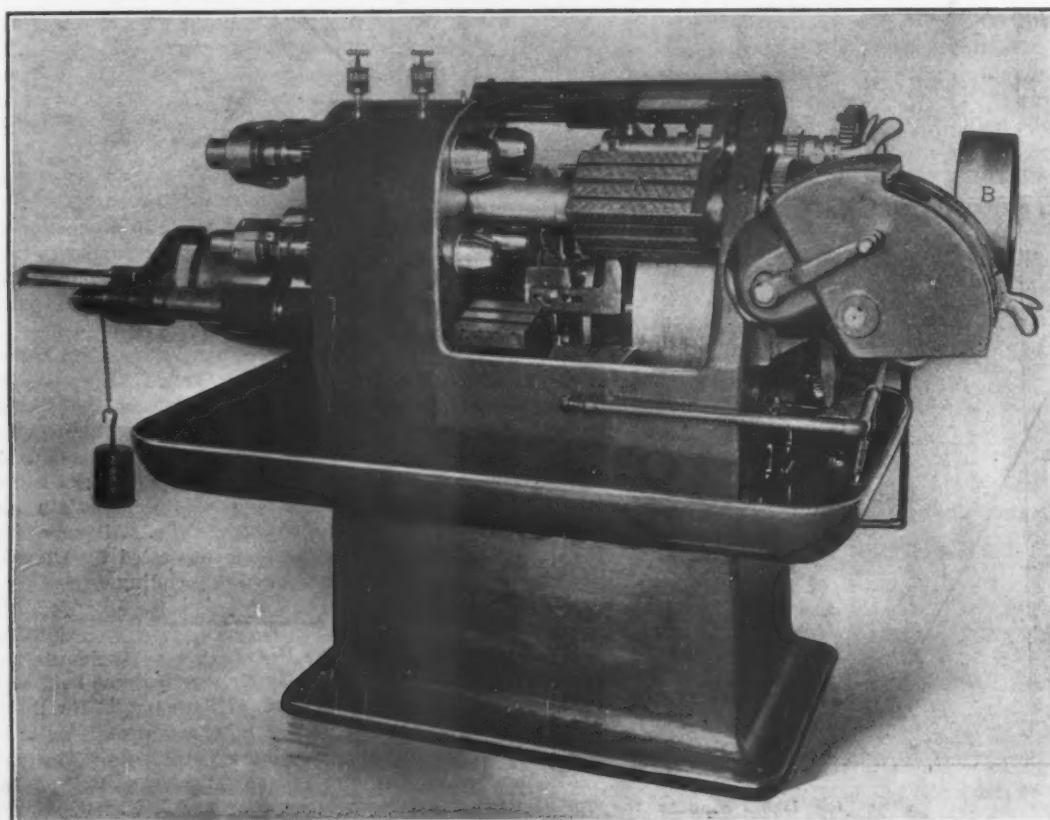


Fig. 1.—The New Gridley Automatic Multiple Spindle Turret Lathe Built by the Windsor Machine Company, Windsor, Vt.

spindle carrying cylinder, which secures permanent and accurate alignment, gives stiff and ample tool support and permits the use of an efficient type of tool; spindles which rotate in the same direction as in the common engine lathe, permitting of the use of standard drills and cutting tools; a constant high speed movement of the cams for the so-called idle movements of the machine, and a slower speed for cutting; a quick change feed mechanism, giving six changes for each of the three cam throws furnished, for work respectively up to 2, 4 and 6 in. long, the feeds remaining constant for each of the throws; all threading done at one spindle position; a weight feed for feeding stock for the new piece, giving a quick movement, regulating against shock by a cam surface, and non-adjustable spindle bearings with large bearing surfaces.

In general, the machine operates like others of the type, the spindles, four in number, being carried in a cylinder which is rotated step by step to bring each spindle successively into position to be operated upon by the various tools. All of the turret tools are held in a nonrotating tool slide, A, Figs. 1 and 2, and are fed forward together, one tool rough turning the bar in one spindle, another tool taking a finishing chip at the next spindle, a die threading the piece at the third spindle, while the finished piece is cut off and a new length of stock fed through the chuck at the fourth spindle. Or

machine departs from the usual design of the type, in that the spindles revolve in the same direction as in a hand operated machine or a lathe, which permits the use of standard commercial drills and tools which have been made for use on single spindle automatics or hand operated turret machines.

The spindle carrying cylinder, which is the name given the members carrying the spindles, is shown in detail in Figs. 4, 5 and 6. Permanency of alignment and rigid support are obtained by making this member one solid piece, and by placing the spindles in one end of the piece, and supporting the tool slide A on its central part between the journals C and D in corresponding bearings C and D, Fig. 6, which constitutes an innovation in design. Alignment is assured because the spindle cylinder and the tool slide are in fixed relation, which is unaffected by wear in either bearing. The tool slide is held from rotating by its arm, E, Fig. 2, which bears on the guide F attached to the tie piece G, which is fastened at each end of the main frame.

The spindle bearings are also novel in that they are designed without adjustments on the ground that greater efficiency is secured with bearing surfaces of large area than with the cone bearings commonly employed for the purpose. In studying the general subject of multiple spindle automatics the designers of this new machine

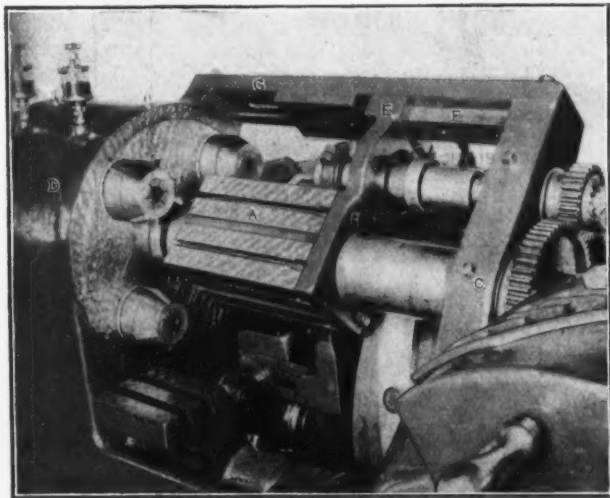


Fig. 2.—A Detail of the Working Features.

were convinced that much trouble results from the necessity of adjusting bearings, and consequently the nonadjustable bearing of large area was adopted, a departure which will interest machine designers generally. It will be noticed in Fig. 4 that the spindle bearing is a long straight lumen-bronze bushing without adjustment, and with nothing to get out of adjustment. The large area is favorable to long life by avoiding undue wear, and when finally wear has reached the point where adjustment is necessary the bushing may easily be renewed.

On the camshaft, shown in detail in the view of the rear of the machine, Fig. 7, are mounted all of the cams used in operating the several motions. Beginning at the head there is the worm gear which carries the cam clutching the loose pulley H to the worm wheel shaft for driving at high speed during the idle movements of the machine; the drum carrying the cam I which feeds the tool slide forward and returns it; a disk J carrying face cams on either side, one for operating the cutting off slide, the other for operating the forming slide; and an arm K carrying a cam for drawing the locking pin, and a roll for revolving the spindle cylinder.

The camshaft, Fig. 3, is driven at two speeds, one comparatively slow, for use during the time the tools are cutting, the other a high speed, for returning the tool slide and revolving the spindle cylinder. While the machine is cutting the camshaft is driven by the worm *g*, Fig. 3, on the spindle driving shaft *b*, through the change gear box *h*, worm shaft *i* and worm gear *j* on the camshaft. When the tools have finished cutting the loose pulley *k*, always running at constant speed, is clutched to the worm shaft *i*. The feed box has two handles, the lower *l* having three positions corresponding to the feed cam used, three of these cams being furnished with the machine, one for work not over 2 in. long, a second for work 2 to 4 in., and the third for work 4 to 6 in. long. The latter cam may be used for the shortest work, but there would be an appreciable loss of time in moving the tool slide its full travel when cutting short pieces. When the lower handle is in the position corresponding to the feed cam being used the upper handle *m* can be placed in any one of the six positions to give the desired feed, arbitrarily placed at 75, 100, 125, 150, 175, and 200 revolutions of the spindle to one inch of travel of the tool slide.

To go further into the details of the feeding mechanism the drive is direct from the spindle driving shaft

upon which is the worm *g*, running in the worm gear *n*, keyed to shaft *x*, to which is also keyed the sliding gear *o*, embodied as a part of a member with the intermediate gear *p* and the handle *l*. The intermediate meshes one of the three gears of the cone *q, r, s*, according to the position of the handle. The lower position is for the 6-in. cam, the central for the 4-in., and the upper for the 2-in. cam. This member controlled by the handle *l* constitutes a part of a larger member operated by the upper

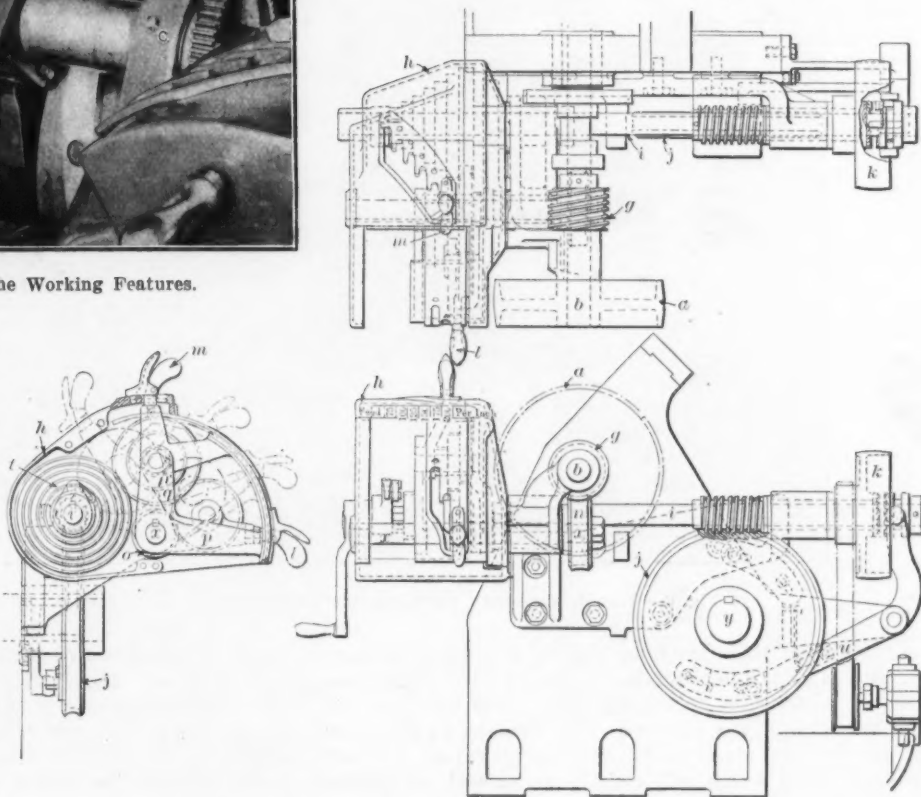


Fig. 3.—Top View and Elevations of the Feed Mechanism.

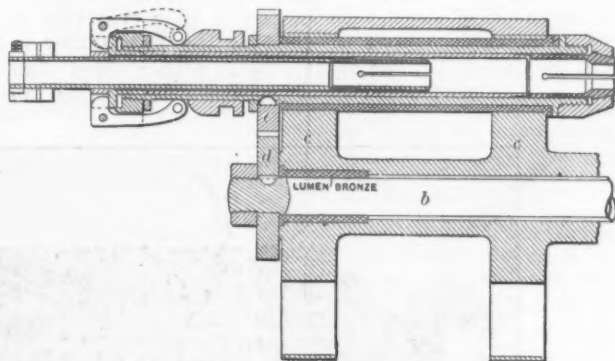


Fig. 4.—Sectional Detail of a Spindle.

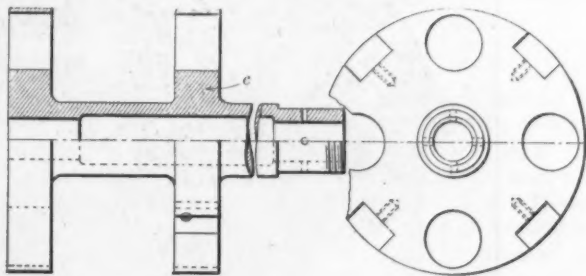


Fig. 5.—Detail of the Turret or Spindle Carrying Cylinder.

handle *m*, which engages the gear *q* with any one of the cone of six gears. As to the amount of feed, the position of the lower handle does not matter; the six feeds are the same, no matter what the cam throw.

The mechanism permits of 18 changes of feed by the combination of the two levers and their cones of gears,

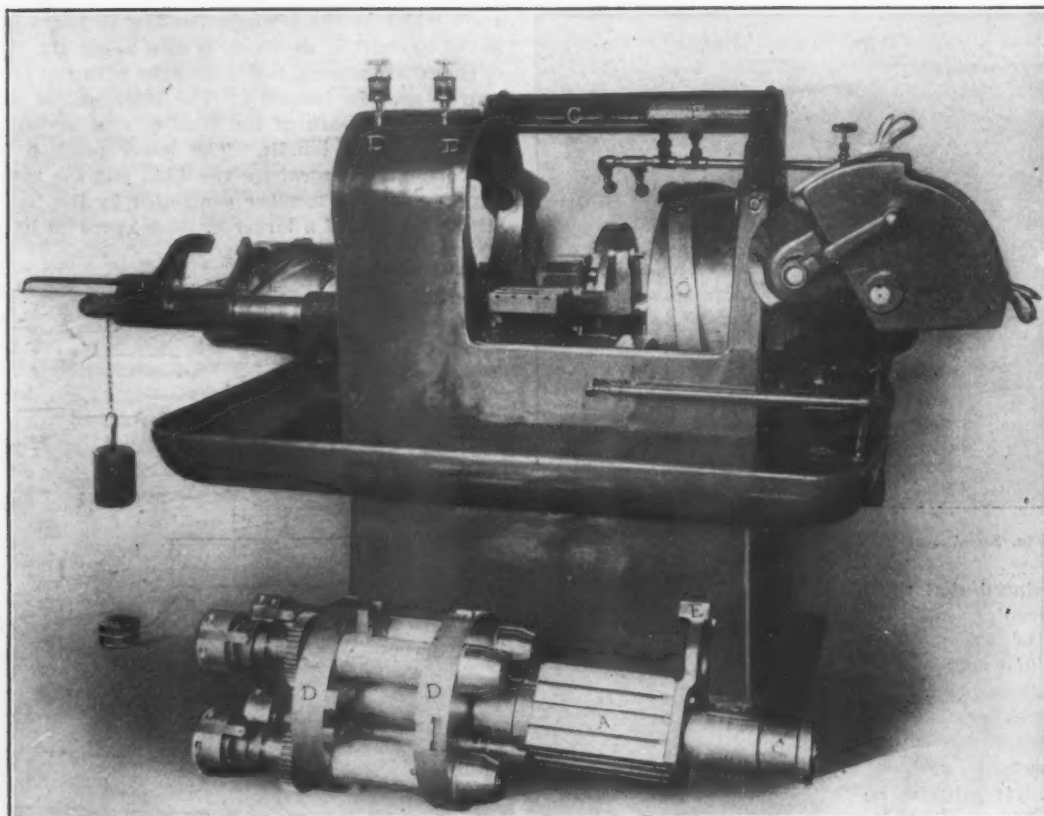


Fig. 6.—The Machine with the Revolving Turret and the Stationary Tool Slide Removed.

so that one of these machines can be adapted to unusual conditions or to the individual's idea of what constitutes the best practice as to cutting feeds. But this was not the intention of the designer. The purpose, as stated, is to furnish six given feeds, sufficiently varied for any desired work, which will remain unchanged, no matter which of the three cam throws are employed.

The loose pulley *k* accomplishes all movements other than when the tools are cutting. They operate at maximum practical speed. On the worm gear is a cam *v*, which actuates a lever *u*, clutching the loose pulley to the wormshaft *i*. The shaft runs at higher speed than the cone of feed gears *t*. The pawl that engages the

ratchet *v* is carried on a sleeve to which is fastened the cone of gears. The ratchet is keyed to the shaft *i*. By this means the power is transmitted from the feed gears to the shaft. This construction permits the wormshaft, under the impulse of the loose pulley, to run faster than the feed gears, the ratchet running away from the pawl.

This mechanism gives a quick change feed for the cutting tools, and a constant maximum speed for the so-called idle movements of the machine, irrespective of its speed of movement during the cutting period, in place of the common practice of a given ratio between these two speeds.

The mechanism for feeding the stock is a new one.

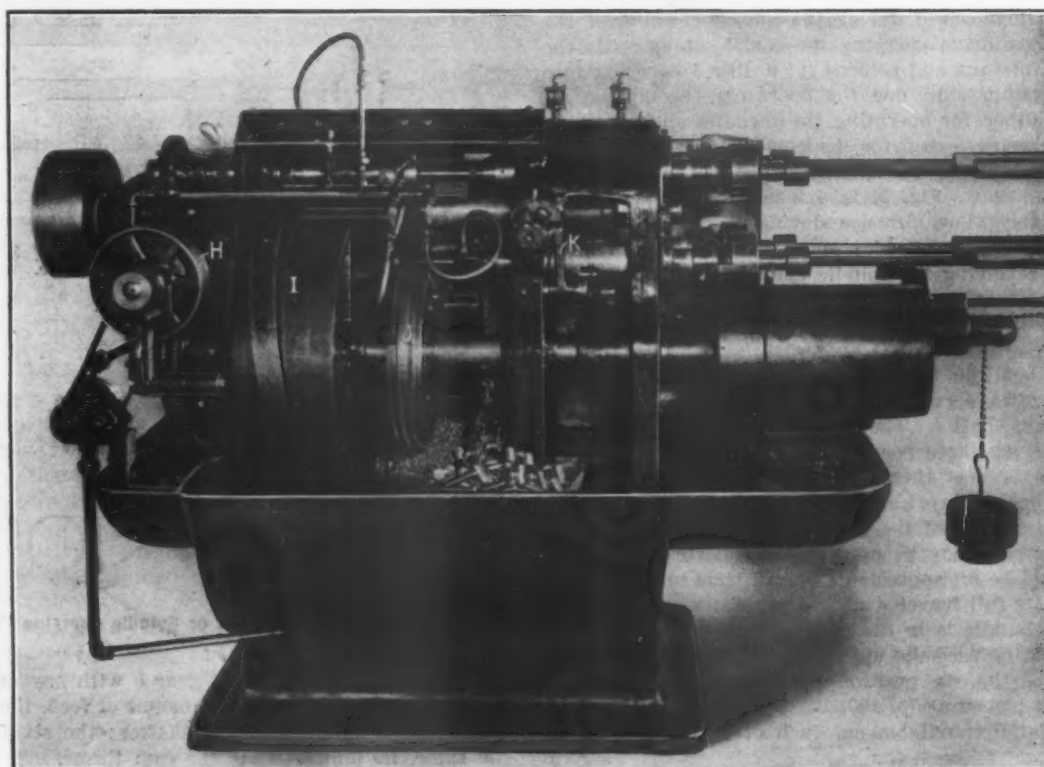


Fig. 7.—Rear View of the Gridley Automatic Multiple Spindle Turret Lathe.

On a shaft mounted on the end of the main frame of the machine are three sliding arms. That nearest the machine frame opens and closes the chuck; the second draws the stock pusher tube back on the stock ready for a new grip, while the third feeds the stock through the chuck for the new piece. The first two arms are operated by cams. The third is actuated while feeding the stock by a weight. The movement is a quick one, but a battering ram effect is avoided by the use of a roll mounted on the arm, which rides on a steep cam angle on the cam drum, shown best in Fig. 6, thus regulating the speed at which the weight can act. The weight is returned to position by a cam motion. It is made heavier or lighter according to the size of stock being used.

The stock stop is attached to the cutting off slide. After a piece has been cut off the cam draws the slide back, bringing the stop into line with the spindle. The chuck opens and the stock is fed through against the stop, whereupon the slide moves forward, carrying the stop away from the end of the piece and the cutting tool into position for its work.

The form of tool slide allows the use of a turning tool as shown in Fig. 8, which is that of the Gridley

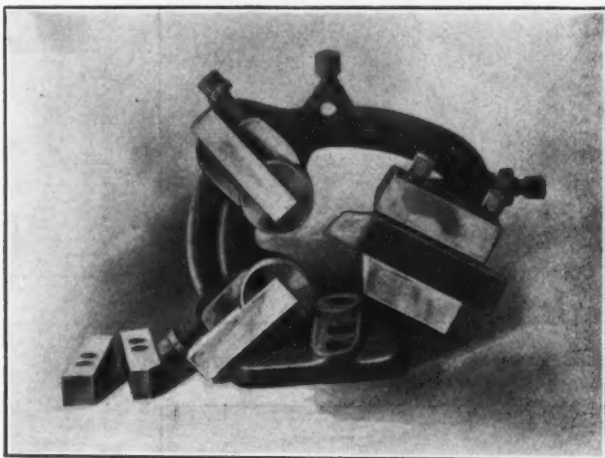


Fig. 8.—A Turning Tool as Used on the Gridley Automatic Turret Lathe.

automatic turret lathe. The slide has sufficient room to permit the placing of one tool back of another, to perform more than one operation at a time at one spindle position.

To secure an efficient, but simple spindle drive, requiring a minimum of attention and repair, the spindles are driven constantly in one direction, as already stated. To obtain a high cutting speed for the turning tools and a lower cutting speed for the die, it is necessary while threading to rotate the die at a speed slightly less than the speed of the spindle, and at a higher speed when running the die off the piece. This is accomplished by putting two gears into the spindle driving shaft, meshing with two loose gears on the threading shaft L, Fig. 1. These gears are of such a ratio that when one of them is clutched to the threading shaft it will rotate the die at a speed slightly less than that of the spindle, and when the other gear is engaged the die will rotate at a higher speed so as to run it off the work. When a left hand thread is being cut the die rotates faster than the spindle when cutting, and slower when running off.

The maximum capacity of the machine is $1\frac{1}{2}$ in. round, 1 in. hexagon and $\frac{3}{4}$ in. square stock up to 6 in. long. The weight of the machine is 4500 lb.

The Abandonment of the "Technolexicon."—The staggering proportions of the work undertaken by the Verein Deutscher Ingenieure in the compilation and publication of the "Technolexicon" appear in the statement issued by the council of that organization explaining why the project was given up. The society had spent \$100,000, and it was estimated that \$20,000 more would be required to settle with the publisher and to meet other

obligations. Five years were spent in collecting words and equivalents in German, French and English. This was completed by the end of 1906. The editorial work, however, was very slow. In four weeks in the autumn of 1907 with the entire editorial force at work the average of words handled was 276 per week. At that rate it would require 40 years to compile the estimated total of between 600,000 and 700,000 words. It was estimated that even under the most favorable conditions 10 or 12 years would be needed, though originally it was thought that the editorial work could be done in three years. Many engineers in the United States co-operated in the work of gathering together technical terms employed in the various branches of engineering and applied science.

Customs Decisions.

An Automobile Decision.

In denying on January 21 the Government's application for a writ of certiorari in the case of J. T. B. Hillhouse, the United States Supreme Court has settled finally a customs controversy of wide interest to automobilists of this country who use their cars for touring purposes abroad. While the case stands in the name of Mr. Hillhouse, he acts merely as agent for Mrs. Collis P. Huntington, the owner. Mrs. Huntington took her machine to Europe and during the progress of the tour several repairs were made. Upon the re-entry of the machine at the port of New York the collector demanded full duties at the rate of 45 per cent. on the car as a unit. Mrs. Huntington's lawyers took an appeal to the Board of General Appraisers, alleging that duty should only be exacted on the repairs or new parts at the 45 per cent. rate. After the board had found in favor of the importer's contention, the United States appealed the issue to the Federal Circuit Court and, later, to the Circuit Court of Appeals. The lower courts found against the claim of the Government, and as a last resort, the Attorney-General applied to the Supreme Court to review the case. The refusal of the Supreme Court to consider the case is regarded not only as deciding that only repairs are dutiable, but also that an automobile's use abroad for one year need not be consecutive. In other words, two periods aggregating more than one year will entitle a machine to free entry. It is stated that the Government would prefer to have automobiles which have been renovated abroad classified as entreties, owing to the difficulty experienced by the authorities in ascertaining the values of the new parts.

A Scrap Iron Decision.

In overruling a protest filed by G. W. Sheldon & Co. and others of New York, the Board of United States General Appraisers has laid down the rule that the provision in the tariff for "scrap iron" includes old refuse and worn out iron material, as well as new scrap or waste iron, fit only for remanufacture. The tribunal, therefore, overrules the contention that the merchandise the subject of the protest is free, and instead holds that worn-out iron chains, steel rails, &c., are dutiable properly at the rate of \$4 per ton as "scrap iron."

Coverings.

In overruling a claim filed by A. A. Vantine & Co., New York, the board has decided that all coverings containing imported merchandise, if identical with cartons, cases, boxes or sacks, should be treated for customs purposes either as usual or unusual coverings. It was alleged by the importers that certain merchandise was packed as a matter of convenience in coverings neither usual nor unusual. In support of this contention, the importers stated that the coverings were not the ones generally employed in shipping the goods, and further, that the coverings in question were intended ultimately for another use. General Appraiser Hay in his decision says that it is clear to the board that, whatever the character of coverings, they should be treated as of one of the two classes of coverings enumerated by Section 19 of the Customs Administrative act.

New Cam Cutting Machine.

A new special milling machine, by the use of which peripheral and face or box cams can be cut, the third designed by A. C. Campbell, superintendent of the E. J. Manville Machine Company, Waterbury, Conn., is here-with illustrated. Cams of the types mentioned are more used than any other form, and in modern automatic ma-

lowing the outline by hand, or with a former, or on a lathe with a suitable fixture. None of these methods were commercially satisfactory for producing cams in quantities.

The first Campbell machine had two parallel spindles, each carrying a face plate at one end and a worm wheel at the other, the two being connected to rotate in unison. One face plate carried the work and the other the

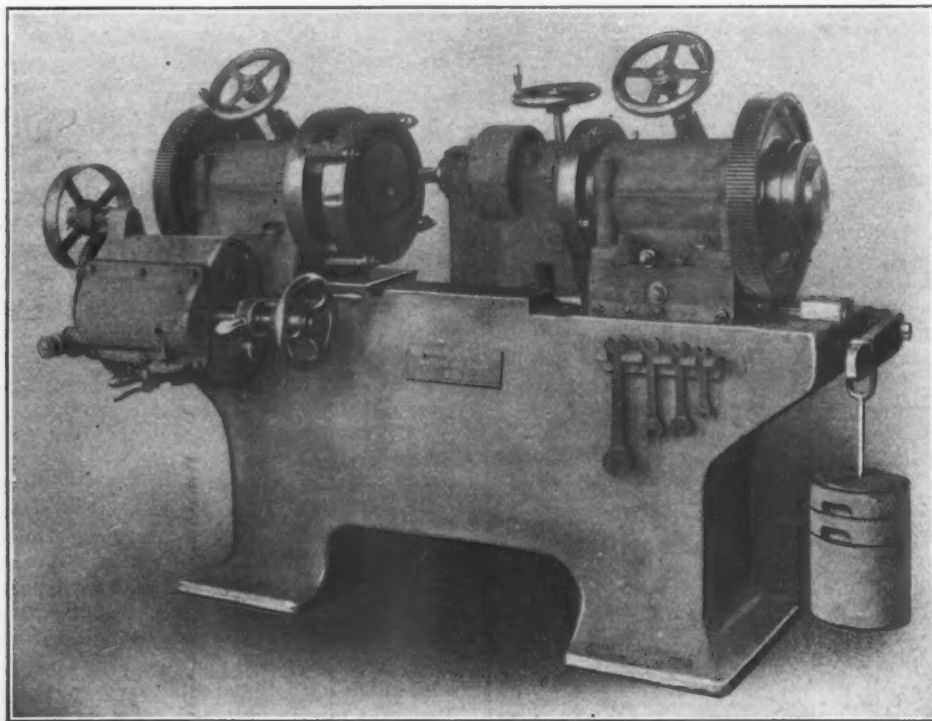


Fig. 1.—The New Cam Cutting Machine Built by the E. J. Manville Machine Company, Waterbury, Conn.

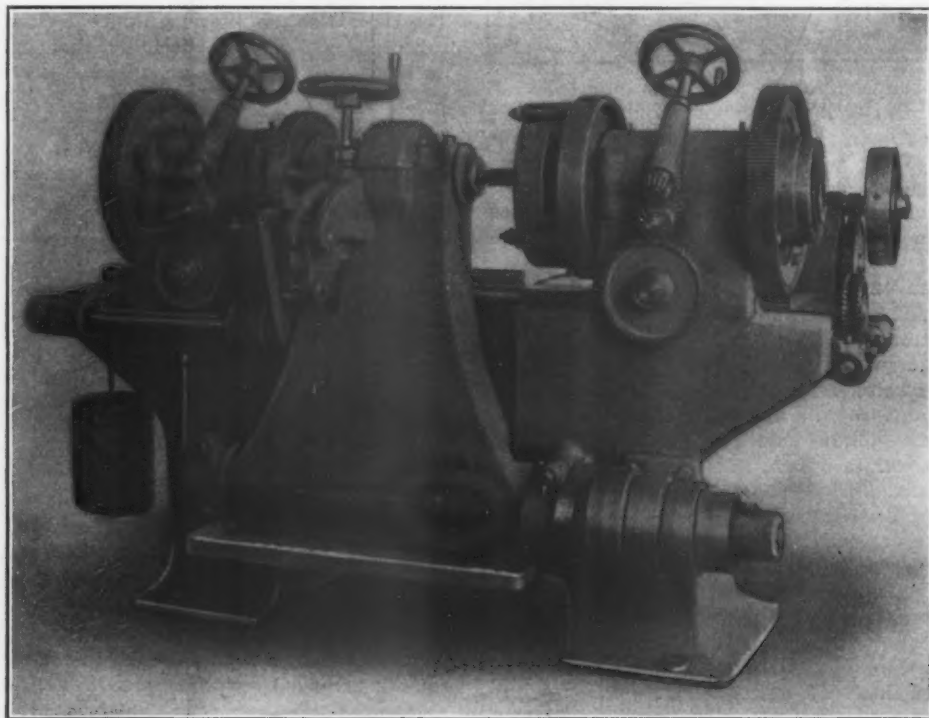


Fig. 2.—Rear View of the Machine, Showing the Swinging Arm Carrying the Milling Cutter.

chinery play a very important part. Machines to cut them are rare, except those designed to make some special cam for sewing machines, &c. There are attachments applicable to milling machines, which answer certain purposes, but what is believed to be the first machines intended especially for milling face and box cams, were designed by Mr. Campbell in 1889, one for small and one for larger cams. Before that cams were generally cut either on a vertical miller or a profiling machine, fol-

lower. A long slide at right angles with the spindles carried a milling spindle and roller, which, being impelled by a weight to bear against the former, caused the mill to cut the work with a contour corresponding to the pattern.

The other machine differed in having the two face plates on the opposite ends of a large spool, rotated by a worm wheel, and the mill and roller on a swinging member pivoted near the floor. One face plate carried

the template and the other the cam to be cut, and the guide roller, bearing on the first, under the influence of a weight, caused the mill to duplicate in the work the size and form of the template.

The new machine is an improvement, combining the good points of the earlier machines with several new features. It is easy to set up and handle, and will cut cams of all sizes up to 20 in. in diameter and having grooves for rolls up to $2\frac{1}{2}$ to 3 in. in diameter. In it the elements are the central swinging arm, pivoted near the floor at the back, and carrying at its upper end a large, well supported, rotating milling spindle, from one end of which projects the mill or cutter, and axially opposite a pin bearing a roller the size of the mill and which follows the template; the main frame to which the arm is pivoted, and two longitudinally sliding heads, dovetailed on the upper surface of the main frame and carrying spindles and face plates, geared together by a long pinion shaft so as to be rotated in unison by a train of belt driven feed mechanism. Both heads, whose axes are eccentric, may be moved to and from one another by a conveniently arranged hand wheel, operating through gears and pinions working with feed racks, and they

head is first moved longitudinally on the bed to the left, away from the mill, by the inclined handwheel at its top. Next, the end of the link above described is lifted by hand so that its notched end is in position to engage with the crank pin in the worm wheel. Thereafter, continued motion of the hand wheel on top forces the arm backward, since it cannot push the link forward. This enables the operator to easily overcome the heavy weight. Reversing this operation, the arm may be readily brought forward until the roll strikes the former, but as it is now in position for the weight to again control it, the link automatically disengages from the crank pin and drops, and the upper hand wheel runs free and has no further control. By this link and worm combination, if necessary, contour milling can be done without the use of a former, as a line on the cam can be followed while the face plate slowly revolves.

Adjustable double gears are used on the outer ends of the main spindles, to take up wear and lost motion.

The formers used are cast iron, $\frac{3}{4}$ in. thick, and are secured to a secondary adjustable face plate, which may be located with exactness to correspond with the cam to be cut. To easily accomplish this a finished surface is

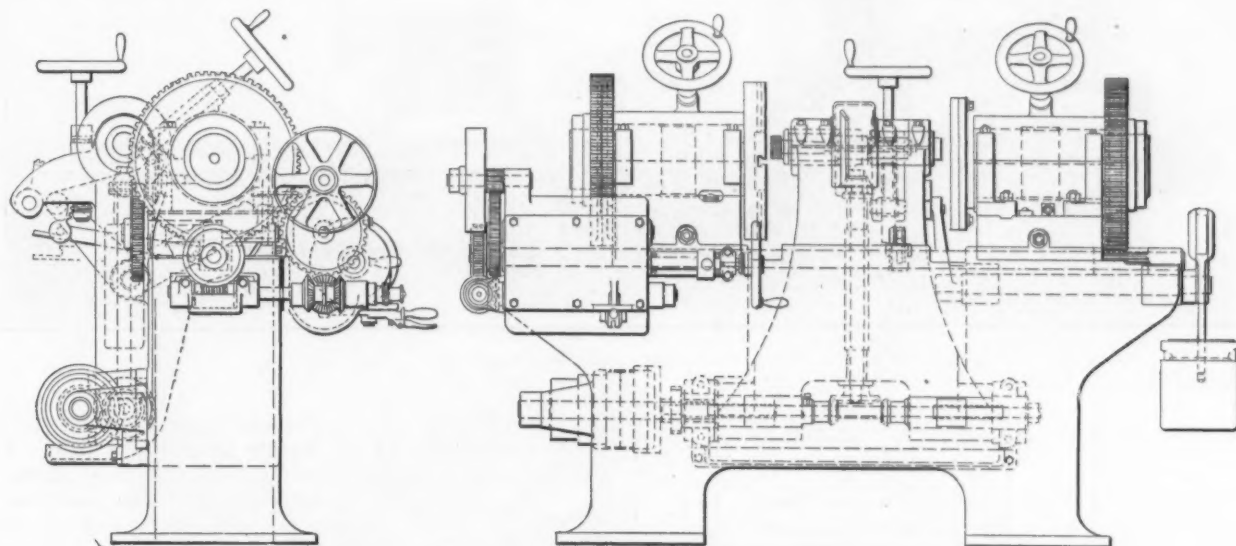


Fig. 3.—End and Front Elevations of the New Cam Cutting Machine.

may be firmly clamped in any position by locking levers.

By referring to Fig. 1, a front view of the machine, it will be seen at once how conveniently all parts are located. Without moving from his place, the operator has the work as well as all working parts and adjustments immediately under his hands and eyes. As will also be seen, the milling spindle is back beyond the machine center, and the swinging motion of the arm may be controlled by the hand wheel on top of it. Fig. 2 shows a rear view of the machine and Fig. 3 front and end elevations, from which the construction and operation will be readily understood with the following brief description:

In this machine, as in its predecessors, the guide roller is held against the former by a weight, but in addition there is a unique mechanism by which the arm is easily forced out away from the cam and former when it is required to put in another cam or to remove the mill. Pivoted on the back of the swinging arm is a worm wheel with its worm shaft terminating at the hand wheel visible on the top. On the side of this wheel is a projecting crank pin, which, as the worm wheel rotates, moves toward and from the machine center. Jointed to the frame and projecting horizontally rearward through and beyond the swinging arm is a bar or link, the out end of which is notched. When a cam is being cut, this link is dropped by gravity out of line with the crank pin and then has no mission, as at such times the arm is being forced toward the cam center by the weight shown, thus causing the roller to follow the contour of the former. When it is desired to change or regrind the mill or remove the work, the work carrying

provided on top of the bed at the front, on which a surface gauge may be placed so as to readily compare the angular position of the cam and former.

Of the feedbox and gear train little need be said beyond the fact that both the mill and the heads may be rotated automatically in either direction, and provision is made for conveniently changing the speed of the same as the mill approaches or recedes from the cam center. It is also a simple matter to disengage the power feed, so that with one hand on the vertical upper back hand wheel, and the other on the horizontal front hand wheel, any line can be traced or followed on the cam to be cut.

The Baird Machine Company, Oakville, Conn., has made several improvements in its oblique tilting tumbling barrel, which was described in detail in *The Iron Age*, Jan. 18, 1906. The machine is now equipped with ring oilers to provide continuous lubrication without frequent attention, a hardened button is placed in the end of the swinging bracket to take end thrust of the large gear shaft; an adjusting screw is provided for regulating the thrust of the bevel gear shaft, and the pinion gear shaft has a bushing that may easily be replaced when worn.

The Pittsburgh Coal Company was exonerated, and the Darr mine disaster attributed to an explosion following the use of an open lamp, by the verdict returned by the coroner's jury. A rigid enforcement of the bituminous mining laws is recommended, as is also a greater number of inspectors at all mines where explosive gas is prevalent.

The Preservation of Steel in Concrete.

That steel used as reinforcement in concrete structures can be perfectly protected against corrosion has been the claim of engineers, and a recent demonstration of the fact was given at New Brighton, Staten Island, N. Y. A one-story reinforced concrete building of J. B. King & Co. was torn down to make room for a five-story building. Some details of the conditions found are given by the *Engineering Record*.

The building had a pile foundation, the piles being cut off at mean tide level. The footings consisted of reinforced concrete placed around and over the heads of these piles. The walls had a thickness of 9 in. up to the grade line and 5 in. from the grade line to the roof, a height of approximately 15 ft. The roof consisted of reinforced concrete beams and girders, the roof slab hav-

New Heavy New Haven Lathes.

A new line of heavy tools now being placed on the market by the New Haven Mfg. Company, New Haven, Conn., includes heavy pattern 24-in. and 28-in. lathes, an example of the latter of which is shown in Fig. 1. Among its special features is the quick change gear box, shown at A, which is of the sliding intermediate gear type. To make a change the gear handle M is placed under the column on the index plate containing the desired thread and the handle L is thrown down to engage the gears. A front elevation of the gear box with the index plate, shown separately, is given in Fig. 2, from which its operation will be readily understood. In this view the handle L of Fig. 1 is indicated by D. The gears will be seen to be not true spur gears, but bevel gears, arranged for a small angle between their shafts. The shaft G is the driven member, and through the gears F and A drives

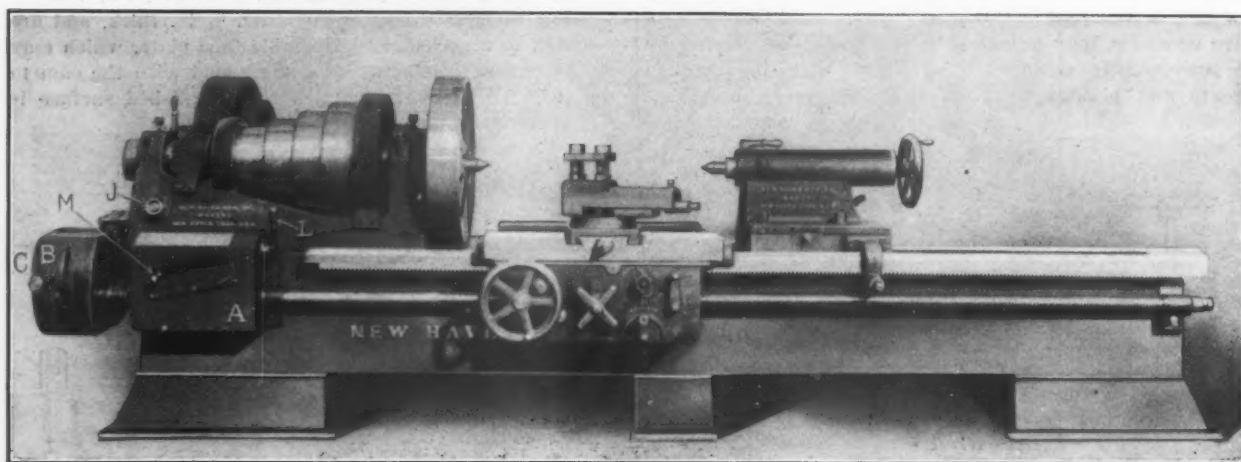


Fig. 1.—The New Heavy 28-In. Lathe Built by the New Haven Mfg. Company.

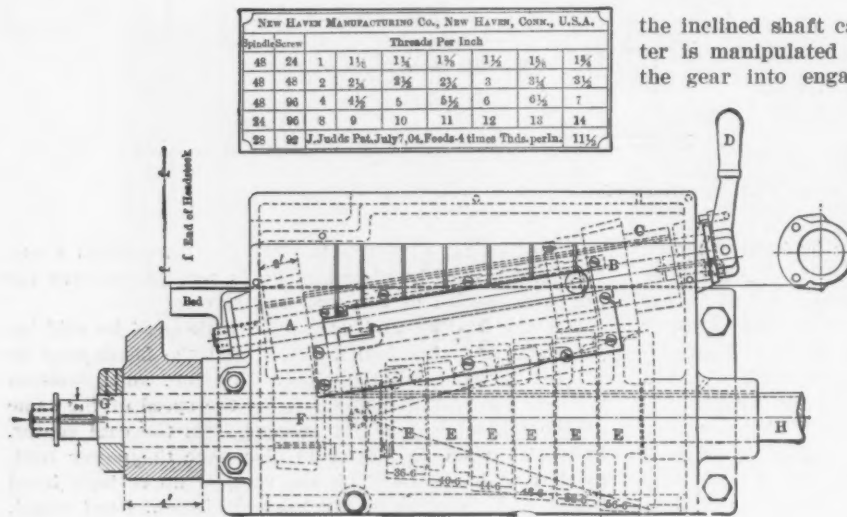


Fig. 2.—Detail of the Gear Box and Index Plate.

ing a thickness of $2\frac{1}{2}$ in., reinforced with $\frac{1}{4}$ -in. twisted steel bars spaced 12 in. on centers. The walls were strengthened by pilasters, and both walls and pilasters were reinforced with twisted steel bars. The interior columns had a cross section 11 in. square and were reinforced with four $\frac{3}{8}$ -in. twisted steel bars held together by $\frac{1}{4}$ -in. hoops of twisted steel, spaced 2 ft., 6 in. on centers. All steel reinforcement was found in perfect preservation, excepting in a few cases where the hoops were allowed to come closer than $\frac{3}{4}$ in. to the surface. Some evidence of corrosion was found in such cases, thus demonstrating the necessity of keeping the steel reinforcement at least $\frac{3}{4}$ in. from the surface. The footings were covered by the tide twice daily. The concrete was extremely hard and showed no weakness whatever from the action of the salt water. The steel bars in the footings were perfectly preserved, even in cases where the concrete protection was only $\frac{3}{4}$ in. thick.

the inclined shaft carrying the sliding gear B. The latter is manipulated by the handle M of Fig. 1 to bring the gear into engaging position with any one of the cone of gears E. These gears are keyed to the shaft H, which is a prolongation of the lead screw. When D is thrown to disengage B from all of the gears E a clutch may be operated to connect the shaft G directly with the lead screw H.

The gear box A, Fig. 1, is supplemented by the box B on the stud plate. By the operation of a single lever, C, four changes of gears are obtained in the ratio of 1-2-4-8, which, with seven changes in box A for each of these positions, make 28 changes in all, having a range from 2 to 28 threads per inch. By the changing of a single gear on the end of the headstock, coarser, or any special threads may be cut. All gears have extra wide face in view of the heavy duty for which the lathes are intended, while the compact arrangement insures the rigidity of the device. Fig. 3 shows the mechanism removed from the box B, Fig. 1. The studs carrying the compound gears are held at each end in the steel yoke D, which swivels on the stud E. The handle C shifts the gear F on the end of the lead screw to the positions indicated on the front of the box, and also swings the gearing into mesh by an up or down motion.

The taper attachment, shown in Fig. 4, is supported on the back of the carriage on a bracket, the central part of which forms a complete box around the slide and swivel bar. Clamp H is secured to the rear of the bed and holds the carriage, while the carriage moves in relation to it. One end of the swivel bar is graduated in inches per foot taper, and the other in degrees. By removing the pin I, the cross feed screw is released from

its driving pinion and left under control of the cross sliding block K, which moves in or out according to the offset of the swivel bar. By this arrangement the compound rest may be run in and out by the crank on the front end of the screw while using the taper attachment, which is a very desirable feature.

The following are the principal dimensions of the two new lathes:

	24-in. lathe.	28-in. lathe.
Swing over bed, inches....	25	29
Swing over carriage, inches.	16 $\frac{3}{4}$	19 $\frac{5}{8}$
Head spindle, front bearing, inches.....	5 x 8	5 $\frac{1}{2}$ x 9
Hole through spindle, in....	2 $\frac{1}{16}$	2 $\frac{7}{16}$
Nose of spindle, inches....	4 $\frac{1}{4}$	4 $\frac{3}{4}$
Cone diameters, inches....	10, 13, 16	11 $\frac{1}{4}$, 14, 16 $\frac{1}{4}$, 19 $\frac{1}{2}$
Width of belt, inches....	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Back gear ratios.....	3.63 and 12.7 to 1	4 and 15 to 1
Number of spindle speeds..	12	12
Range of spindle speeds, revolutions per minute...	6.15 to 200	5 to 225
Maximum belt travel per revolution of spindle, feet.	53	76.5
Speed of countershaft, revolutions per minute....	125	130
Countershaft pulleys, in....	18 x 5 $\frac{1}{2}$	20 x 5 $\frac{1}{2}$
Tailstock spindle, inches...	3	3 $\frac{1}{2}$
Tailstock bearing on ways, inches	18 $\frac{1}{4}$	22 $\frac{1}{2}$
Carriage bearing on ways, inches	36 $\frac{1}{2}$	40
Range of screws per inch...	1 to 28	1 to 28
Range of feeds per inch...	6 to 168	6 to 168
Distance between centers with a 14-ft. bed, in....	100	87
Shipping weight of 14-ft. bed lathe.....	8,000	10,000

In place of the quick change gear drive the company is prepared to furnish a plain feed box having three in-

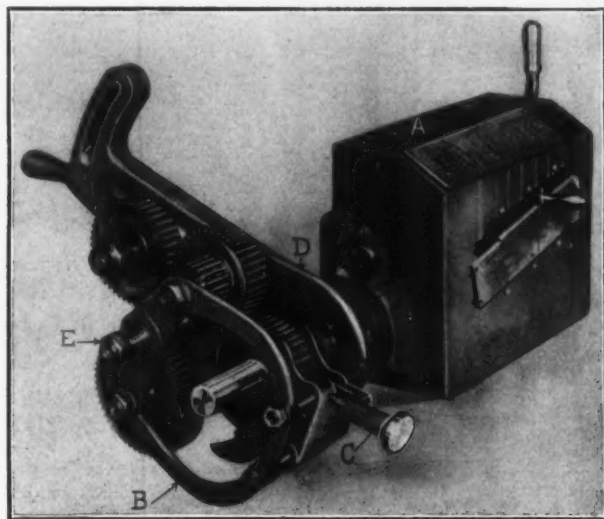


Fig. 3.—The Feed Change Mechanism Removed from the Lathe.

stantaneous changes of feed, obtained by throwing a single lever. These feeds are in the ratio of 1-2-4. Both lathes have offset tailstocks, allowing the tool block to be swung around parallel to the line of centers. The handle J in Fig. 1 operates the reverse gears, driving both screw cutting and feeds. There is also a reverse in the apron for feeds. The head spindle runs in adjustable taper boxes of special bronze. The compound rest on the 28-in. lathe has an angular power feed with a run of 10 in.

The Worcester Works of the American Steel & Wire Company are running on about one-half of a full payroll, the several departments having different weekly schedules, ranging on the whole from 40 to 50 hours. The Morgan Spring Company is operating on a 40-hr. schedule at Worcester. The Wright Wire Company is running full time at both Worcester and Palmer, Mass., a special effort being made in the production of poultry netting. The Spencer Wire Company is running full both at Spencer and Worcester, with a slight curtailment in a small portion of the latter works, in which a 55-hr. week has gone into effect. The wire goods manufacturers of Worcester are fairly busy.

Reductions in British Iron and Steel Prices.

Current British iron market reports reflect the readjustment that is going on in prices of pig iron and finished material. On January 10, Cleveland No. 3 pig iron was quoted 48 shillings 9 pence, and Cleveland warrants 48 shillings 6 pence. The "realized price" of Cleveland pig iron in the last quarter of 1907, as recently ascertained, was 54 shillings 4 pence, comparing with 57 shillings 3 pence for the third quarter. The market for hematite pig iron is weak, and 59 shillings is

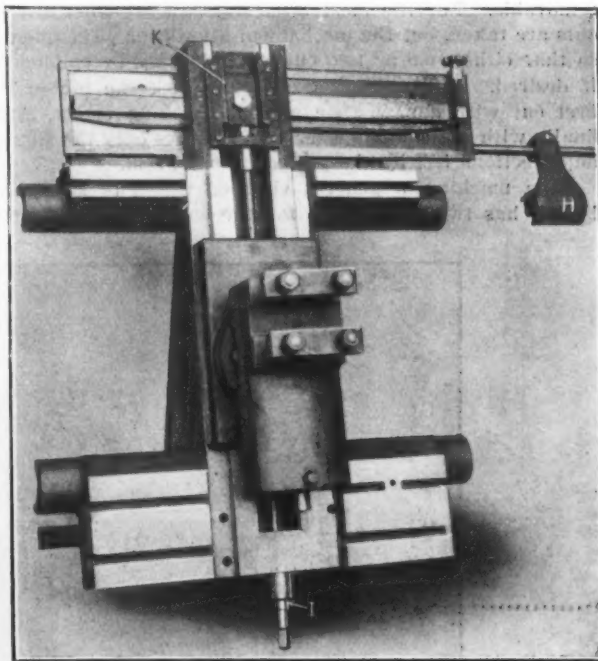


Fig. 4.—Top View of the Carriage and Taper Attachment.

now quoted on the Northeast Coast, as compared with 81 shillings 6 pence in the fall of 1907. The third quarter of 1907 saw the climax of the recent boom. The low point from which the advance in Cleveland iron was carried was 42 shillings 4 pence in the first quarter of 1904. The warrant stocks of Cleveland iron on December 31 were 89,203 tons, a reduction of only 6738 tons for December, the smallest since February, 1906. The decrease in stocks in warrant stores in 1907 was 448,951 tons. In January, in spite of curtailment of output by the blast furnaces, Cleveland iron in warrant stores has increased and is now close to 100,000 tons.

Values have been settling recently in finished iron and steel. Steel ship plates and angles were further reduced, making a decline of £1 in a few weeks. Plates are now £6 10s. and angles £6 2s. 6d. Other reductions made since the opening of the year are 10 shillings in Lancashire boiler plates, and 5 shillings in iron bars and angles in the North of England, where steel beams are down to £5 17s. 6d. In the Midlands, gas strip was officially reduced by 5 shillings and marked bars by 10 shillings.

The final account of the receivers of the Susquehanna Iron & Steel Company has been filed in the court at Lancaster, Pa. The receipts during the time of the receivership were \$6,564,712.80, and the disbursements \$6,541,618.79, leaving a balance of \$23,094. In addition there remains due and payable to the receivers on account of the purchase money for the company's properties the sum of \$100,000. The properties were sold some time ago, for \$560,000, and are now being operated by the new owners, under the name of Susquehanna Iron Company. The balance in the hands of the receivers will, it is estimated, pay a dividend of about 40 per cent. to the creditors; but there will be nothing for the stockholders. The capital stock amounted to \$1,500,000.

The Waltham Automatic Clock Gear Cutter.

A bench machine, designed primarily for cutting clock pinions, or gears for kindred mechanisms, where the most perfect work is desired, is herewith illustrated. It is adapted for cutting pinions of any size up to 1 in. in diameter and 1 in. in length of cut, the centers taking a staff longer than this. The machine is manufactured by the Waltham Machine Works, Waltham, Mass., and, as shown, is furnished with automatic feed from a magazine, but this may be dispensed with, the magazine being removable. For the most accurate, finished work three cuts are taken, but the mechanism allows for adjustment, so that either one or two cutters only may be employed if desired. In the highest class of work the pinion is first cut with a saw, then with a roughing cutter, and finally with a finishing cutter that removes only the slight imperfections left by the preceding operation.

The machine, a general view of which is given in Fig. 1, has two drives, one for the cutters, which is of

step grooved pulley through a hardened steel worm running in a bronze gear. The movement of the slide that carries the work is effected through the cam *a*, Fig. 2, in which runs a roll, *b*, Fig. 3, attached to the lever *c*. The lever is connected to the slide *d* by the connecting rod *e*, Fig. 4. This rod is adjustable in the lever so that it may be clamped at varying distances from the fulcrum, giving varying length of stroke to the work slide, as required. The opposite end of the rod is fastened to a rack connected to the slide by a pinion, the rack and pinion being used to adjust the work longitudinally in relation to the cutters. When adjusted they are securely clamped to the slide. The work is held between centers, as shown in Fig. 4, one end being driven into a taper hole, fitting the end of the pinion shaft, and the other on a conical dead center, so that it can turn freely.

The indexing is accomplished by means of a plate cut with the requisite number of notches, corresponding to the pitch of the pinion, and operated by a cam working through a lever and spring; this mechanism is of the company's standard type.

On the quick returns the cutter spindle is lifted by a

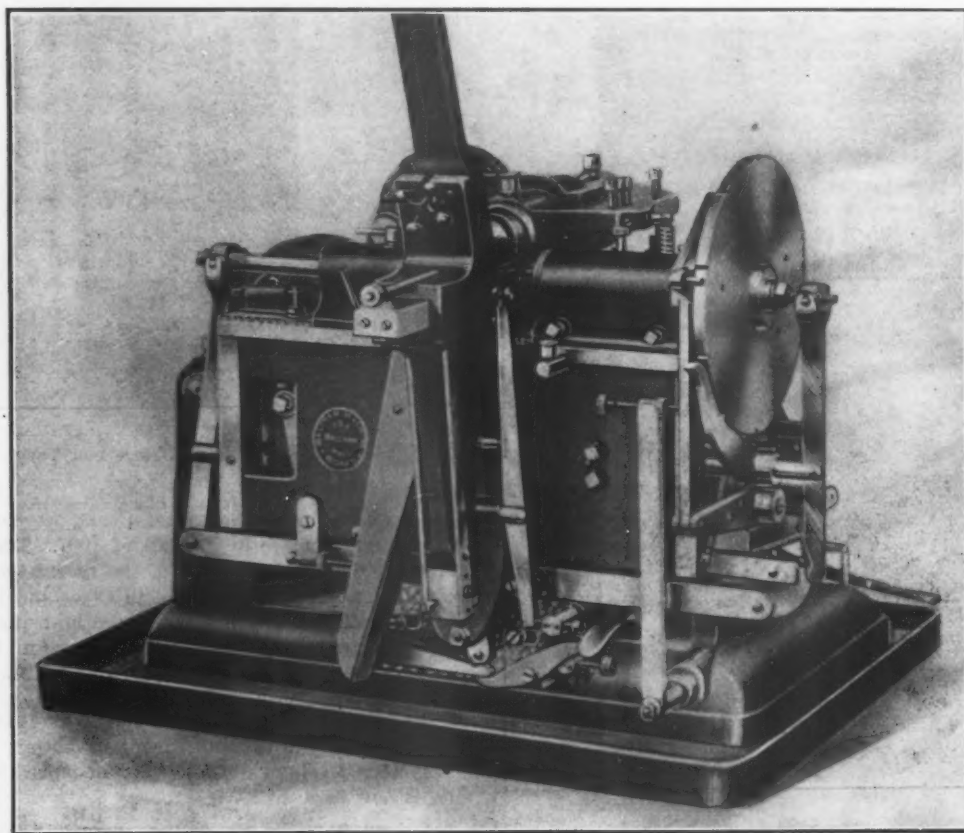


Fig. 1.—An Automatic Machine for Cutting Clock Gears, Made by the Waltham Machine Works, Waltham, Mass.

constant speed, there being no necessity of varying the cutter speed, as the cutter is always of one diameter, the other for the cam shaft, which governs the automatic movements of the machine, and is taken from a three-step grooved pulley to provide for different lengths of work slide movement. The cutter drive is from a triple grooved pulley carrying three round belts. The duplication of belts is desirable that there may be no interruption to the operation should one belt break or slip. On the hub of the pulley is mounted a gear, which is one of a train of three gears that drives the cutter spindle. The gears, with the spindle, are carried on a swinging member, which is pivoted on the loose pulley shaft, permitting the cutter to be lifted from the work on the quick return stroke, and eliminating all belt pull from the spindle. The saw, roughing cutter and finishing cutter are carried on the spindle, the finishing cutter nearest the front bearing to give it the greatest stiffness. The spindle is of hardened steel, with bronze bushing and double cone bearings.

All automatic movements of the machine are from cams mounted on a single shaft, driven from the three-

plunger operated by a cam, the purpose being to prevent the cutter dragging through the work, and also that the indexing may be done during the return stroke without loss of time. When the index has completed a full revolution the slide *f*, Fig. 2, carrying the cutter spindle is automatically brought forward to place the next cutter in line with the work. On the slide *f* is mounted a cap, not shown in the drawing, which carries three-stop screws, one for each position of the cutter spindle. At the beginning of work on a blank the stop *h* on the plate *g* is in position for the stop screw regulating the spindle for the saw. At the end of the first revolution of the index the plate *g* shifts automatically, bringing its stop *i* in position to engage the roughing cutter stop screw. At the end of the second revolution of the index the screw regulating the position of the finishing cutter comes to a bearing on the stop *j*. The blank completed the screw *k* causes the plunger *l*, Fig. 5, to actuate the lever that throws back the slide. The plunger *m* operates with each revolution of the camshaft, but it performs no function except when the plunger *l* is brought into contact with it, when it returns the cutter slide to its orig-

inal position for the first operation, that of the saw. While this is being done the part *n* of the plate *g*, Fig. 2, is brought into contact with the sliding bar *o*, causing the magazine to act and deliver a new blank to the work centers.

The power to operate the magazine feeding mechan-

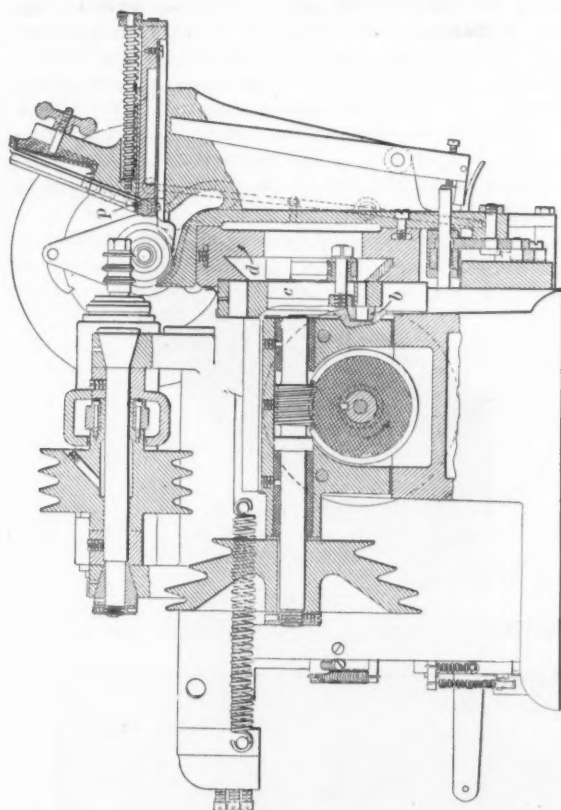


Fig. 3.—Left End Elevation.

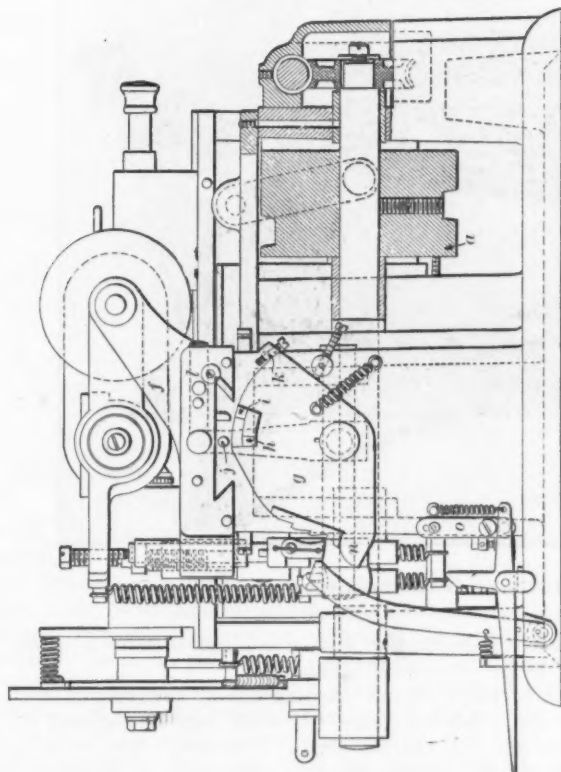


Fig. 2.—Front Elevation.

ism is transmitted from the return stroke of the work slide. The cut pinion is removed and a blank inserted in its place. To accomplish this the centers separate, the finished pinion is pushed out of its socket, a new blank is transferred to position in line with the centers by the sliding carrier *p*, Fig. 3, and the centers engage the blank, the carrier returning to position for another blank. The magazine feeding attachment can be easily removed and the machine used for hand feeding. A simple adjustment of an eccentric will adapt the machine to stop automatically at the end of the last cut. All working parts of

the machine which are subject to wear are of hardened steel, and the same degree of care is carried through in the general construction of the tool.

During the late season of navigation the ore boat B. F. Jones, named in honor of the president of the Jones & Laughlin Steel Company, Pittsburgh, and owned by that company, brought down on its first trip 10,655 tons of ore, equal to a little more than 261 cars of 40 tons each. On the return trip the boat carried from Duluth to Buffalo 379,868 bushels of wheat, or 11,396 tons, said

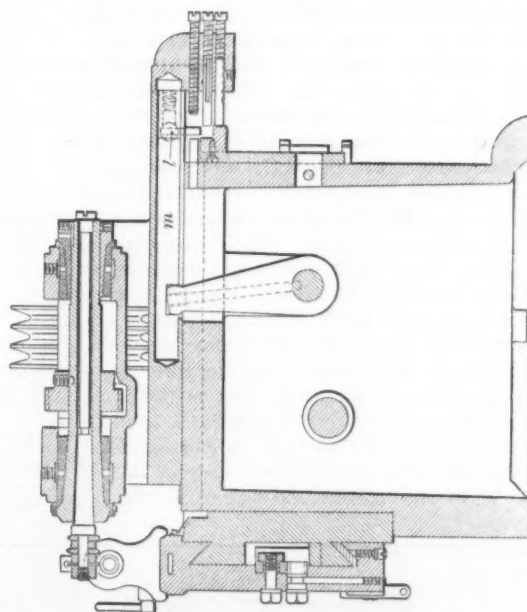


Fig. 5.—Right End Elevation.

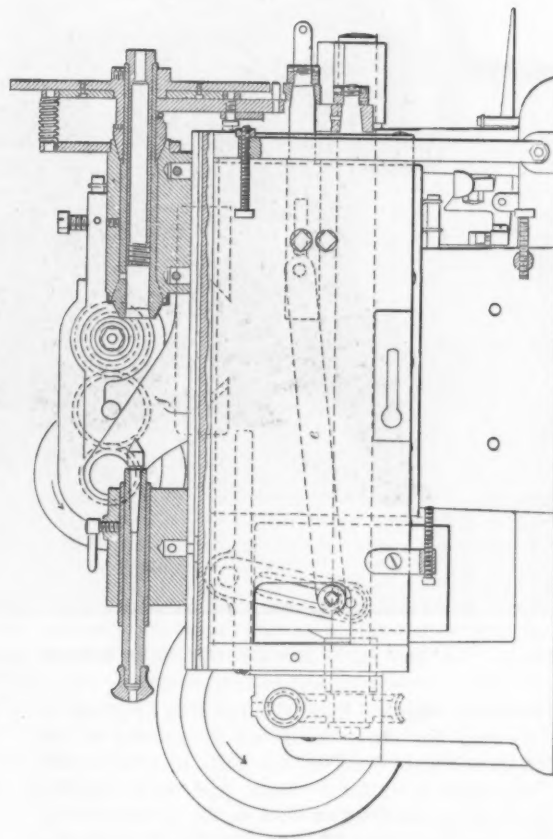


Fig. 4.—Rear Elevation.

THE WALTHAM AUTOMATIC CLOCK GEAR CUTTER.

to be the largest cargo of wheat ever carried by a vessel. On the return trip north the boat carried 10,386 net tons of coal from Erie to Duluth, also one of the largest cargoes of coal ever carried by a single vessel.

At a meeting of the directors of the Republic Iron & Steel Company held in New York last week it was stated that the company was then operating more than 30 per cent. of its capacity, as compared with 18 per cent. in the last week in December. None of the idle blast furnaces of the company has been started up as yet.

The New Landis Staybolt Cutter.

One of the most important of the novel features of the new staybolt cutter, illustrated in Fig. 1, and recently placed on the market by the Landis Machine Company, Waynesboro, Pa., is its die equipment. The patent dies, although the same as used on other Landis bolt threading machines, are very different from those used on other staybolt machines. The chasers are each 4 in. long, and have threads milled on the flat side running the full length of the chasers, as shown in Fig. 2. These chasers are set tangent to the rod being threaded, which gives the correct cutting clearance. The rake can be ground to any angle desired to suit the kind of material being cut, and a rolling chip can be taken, as with a lathe tool, consequently the highest possible speed in thread cutting can be employed and the best results obtained. All chasers are perfectly interchangeable.

The fact that no lead screw is required to govern the pitch of the rod being threaded makes this die especially valuable in cutting staybolts. The chasers are not hobbled, but are milled, and are held in such a manner that the front or working teeth will do the cutting at all times, while the back teeth can do no cutting at all, but extend across the cutting line, and thus the four chasers form a lead nut, which bears on the threaded rod and draws it into the cutting teeth, true to the pitch of the die. This lead is so positive that it is claimed to be impossible to alter the pitch of the thread by retarding or forcing the rod into the die; the only effect would be either to strip the threads off the rod entirely, or to

die itself, and in making these dies the shrinkage of the metal that may occur in hardening is taken into consideration, so that the inaccuracy of this die is minimized. When the dies and the lead screws in machines using the latter are not exactly of the same pitch, a bad and distorted thread will be produced, because the lead screw will work against the dies, and the lead screw nut being the most powerful the die is bound to distort the thread, making it ragged and frequently pulling off the tops of the threads, as all of the teeth of a hobbled die can shave the thread. The die in the Landis machine, it is claimed, never requires to be annealed, hobbled or retempered, consequently is not subject to the changes which are liable in re hobbing dies. The life of the die is also claimed to

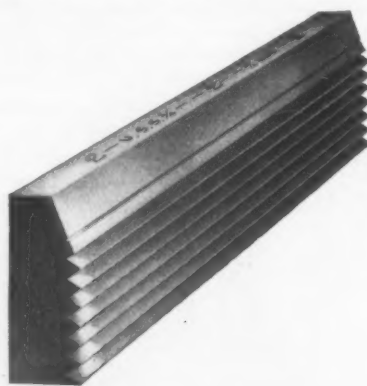


Fig. 2.—One of the Chasers, Four of Which Constitute the Die.

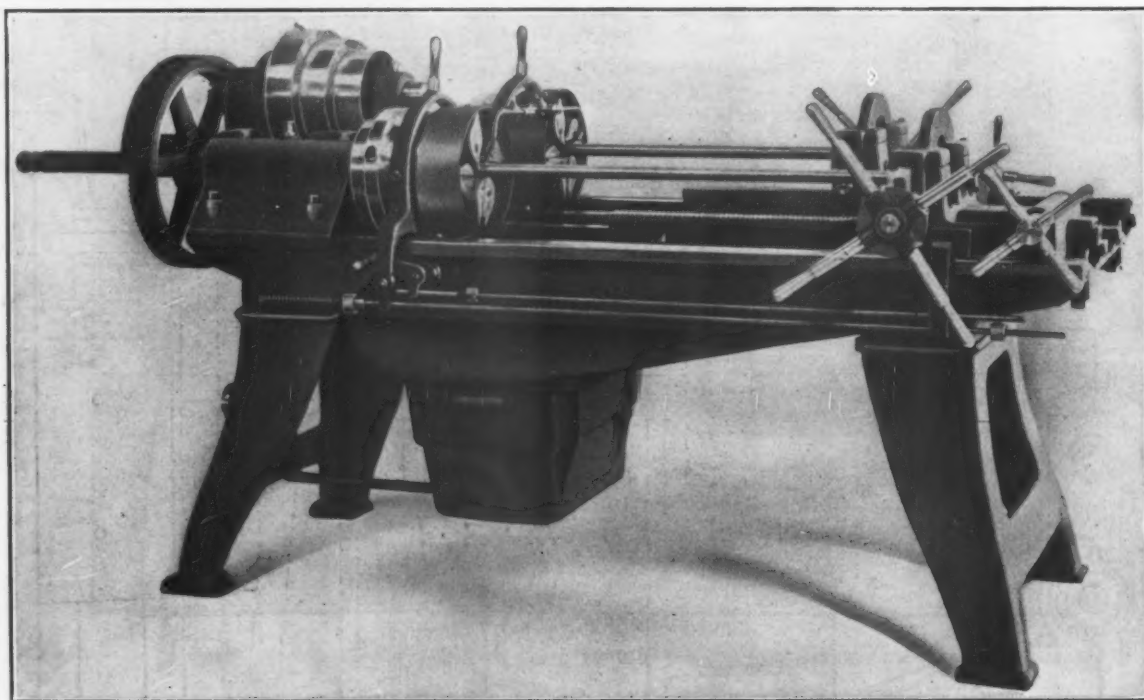


Fig. 1.—The New Staybolt Cutter Built by the Landis Machine Company, Waynesboro, Pa.

pull the teeth off the die. The lead remains constant always, since the die never needs to be ground in the throat; all grinding is done on the ends of the chasers, which gives them a uniform shape, and each grinding renews the leading qualities as well as the cutting ability of the dies. In Fig. 2 may be seen the line of bearing of the rod as it enters the die, showing the teeth that do the cutting, and it will be noticed that as the rod goes further into the die it takes bearing back of the face of the chaser.

Accuracy of pitch on work cut in machines using lead screws is doubly difficult to obtain, since it depends upon exact agreement between the leads of the dies and the screw, and both have to be hardened with a risk of suffering change of pitch. The best lead screw made must be cut with some form of die or on an engine lathe where accuracy cannot be guaranteed. With the Landis die there is only one hardening to contend with, that of the

be greater than that of any other, and to have a much wider range on special diameters.

The carriage on the machine has adjustment up and down and sidewise, hence the work can be centered to the die and the cutting strain is central. The rack is provided with recesses between the teeth, so that chips or scale dropping on the rack will fall through and offer no interference to the teeth of the carriage pinion. The machine is built in single and double head patterns in sizes up to 1½ in. capacity. High speed dies can be furnished and used to great advantage, especially since they do not require re hobbing or retempering. Each machine is provided with a pump, a countershaft, wrenches and an automatic throw-out. The main spindles of the machines are so arranged that any oil which may be carried into the spindle will feed back into the oil tanks, and not be carried out at the rear end of the spindle to run on the floor.

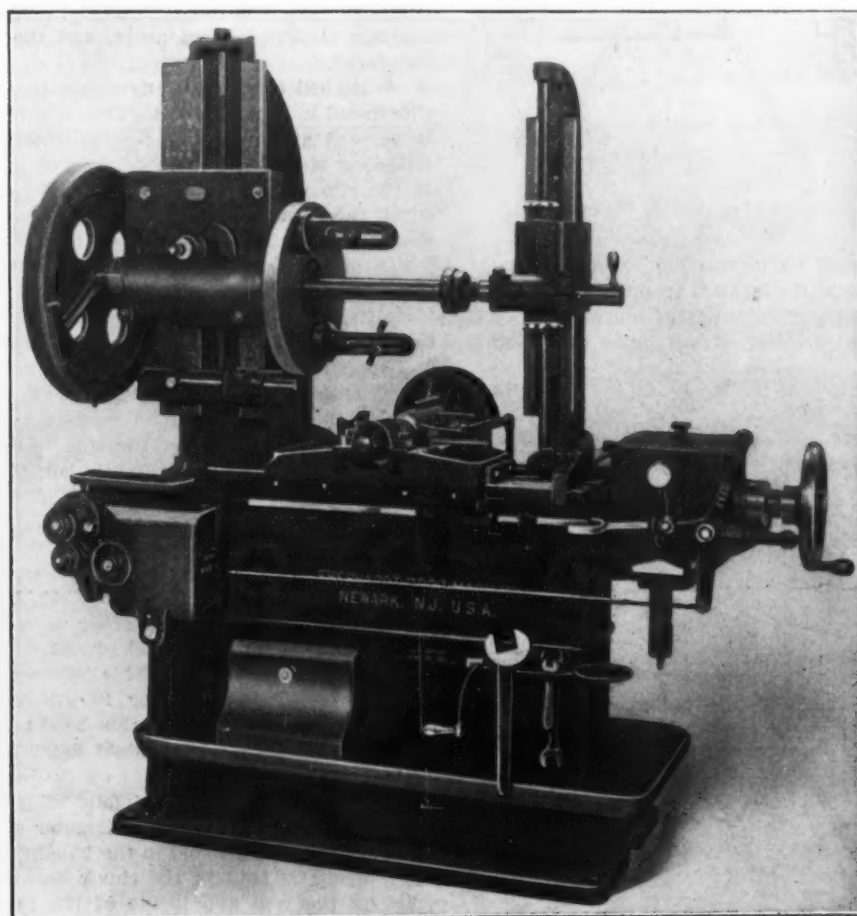
The Eberhardt Bros. No. 3 Spur Gear Cutter.

The machine herewith illustrated is new only in that it is a new size of the automatic spur gear cutting machine made by the Eberhardt Brothers Machine Company, Newark, N. J., and has an especially large face capacity. It is known as the No. 3 machine, and is intended to cut pinions and spur gears up to 36 in. diameter by 10 in. face. Cast iron gears of four diametral pitch and steel gears of five diametral pitch, can be formed at one cut and with a fast rate of feed; heavier work is possible by taking a preliminary stocking out cut.

The unusually wide face that it is possible to cut, 10 in., is an advantage when cutting narrower gears, since a stack of two or more can be cut at one setting. This is made possible by the arrangement of the frame and cutter slide; the extremities of the slide guides are allowed to run slightly past the column, so that the cutter

change gears, but excepting prime numbers over 100, and many higher numbers; change gears for speed and feed changes; a face plate with jacks and drivers for driving gears; a work arbor with collars and stepped flanges; a removable type of cutter arbor; an oil pump and fittings, and a countershaft. The countershaft is of the tight and loose type and is ring oiling. The loose pulley is fitted with a loose bush arranged for lubrication.

The Forest Service at Washington estimates that the steam and street railroads of the country used in 1906 for new track and renewals more than 100,000,000 cross-ties. The average price was 48 cents. Oak furnished more than 44 per cent. and the Southern pines, which rank second, about one-sixth. Ten per cent. of the ties purchased were treated with preservatives. In the United States, estimating 2800 ties to the mile, there are over 800,000,000 ties in service. Cedar ties last 11 years.



The No. 3 36-In. Automatic Spur Gear Cutting Machine Built by the Eberhardt Brothers Machine Company, Newark, N. J.

spindle may be brought very close to the face of the column.

In respect to its mechanism the machine is similar to others that have been produced by this concern. The principal features—the positive indexing mechanism, the spur gear drive to the cutter spindle, the arrangement whereby the feed screw is under tension instead of compression, and the long cutter carriage with the spindle in the center of its length, have already been described in these columns in connection with the illustration of the No. 5, a 60-in. machine, which appeared in *The Iron Age*, May 30, 1907. A point deserving repeated mention is the placing of all of the controlling handles on the side and near the hand wheel at the end of the machine so that the operator has control of all of the movements from one position. The hand wheel has a clutch and spring to keep it disengaged during the operation of the machine.

The equipment regularly furnished includes an indicator for setting the cutter central; change gears for cutting all numbers of teeth from 10 to 100 and all from 100 to 400, including multiples of the prime number

spruce 10 years, redwood nine years, but these woods are not generally available, and they lack the desired weight and hardness. Of tie timbers in general use—chestnut, white oak, tamarack, spruce and Douglas fir—the average life is but seven years. A treated tie, with equipment to lessen wear, will last 15 years. It is estimated that to maintain each tie now in track two trees must be growing.

At the annual meeting of stockholders of the Riter-Conley Mfg. Company, Pittsburgh, builder of iron and steel construction work of all kinds, H. A. Carpenter was elected president; J. Gilmore Fletcher, vice-president and general counsel; W. L. Jack, treasurer, and T. B. Riter, secretary. The resignations of John S. Craig, secretary and treasurer; W. C. Coffin, vice-president, and Robert A. McKean, general manager, were accepted by the board. Mr. Carpenter, who succeeds T. B. Riter, deceased, as president of the company, was graduated from the Sheffield Scientific School of Yale in 1891, and has been connected with the Riter-Conley Mfg. Company since 1896.

Gisholt Turret Lathe Work.

The following description of methods for finishing flywheels gives a good idea of what may be accomplished in the saving of time on this class of work when performed on a turret lathe of the type built by the Gisholt Machine Company, Madison, Wis. A method of finishing a fly-

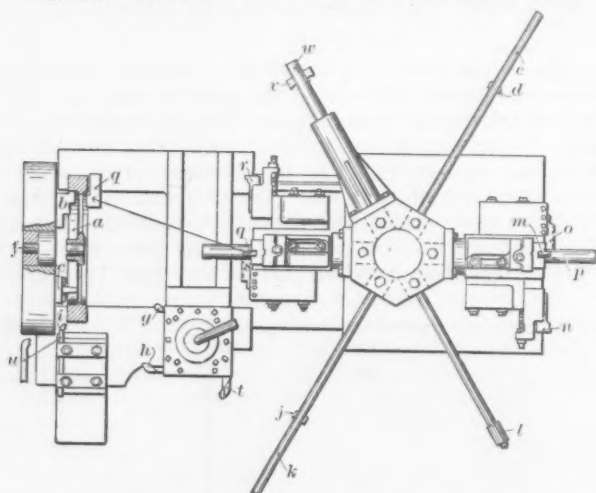


Fig. 1.—Finishing a Flywheel in One Operation.

wheel of the type used on automobile or other gas engines at one chucking in the lathe is graphically indicated in Fig. 1. There are certain kinds of wheels that will permit of finishing to excellent advantage by this method

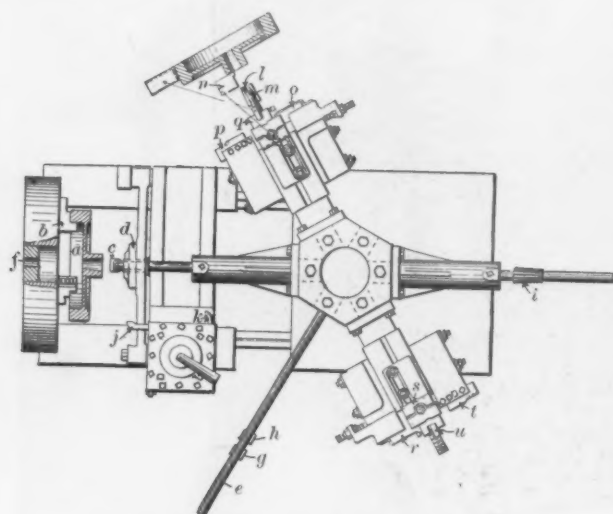


Fig. 2.—First Operation by Another Method.

which will effect a material saving in time over methods requiring a second operation. The carriage of the machine here illustrated is equipped with a wing rest, or auxiliary tool post, mounted, as shown. The adjustable

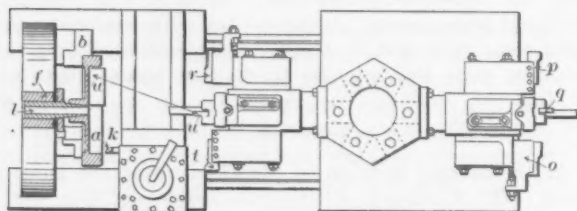


Fig. 3.—Second Operation by the Same Method.

tool holders shown on the main turret are hereinafter referred to as the facing heads.

The piece *a* is first chucked on the inside of the rim with special hard chuck jaws, *b*. The pieces *c* are clamped to the face of the chuck as stops, so that every piece of work may be chucked in exactly the same position. The

first operation consists in rough boring the hole. This is done with the double ended cutters *d* in the boring bar *e*, while the bar is supported in the chuck bushing at *f*. While boring the hole, tools *g* and *h* are used for breaking the scale on the front face of the hub and rim. Tool *h* in the turret tool post is used for breaking the scale on the periphery, and tool *i* in the wing rest, is used for breaking the scale on the back face of the rim. As soon as the scale is removed the hole is finished with the cutter *j* in the bar *k*, and is reamed with a reamer *l* mounted on a floating arbor. Next, the cutters *m*, *n* and *o* in the facing head are used for rough facing the front of the rim and hub. The facing head is supported in the finished hole by the arbor *p*. The front of the rim and hub face are then finished with the cutters *q*, *r* and *s* in the finishing facing head. The periphery is finished with the cutter *t*, and the back face with the cutter *u*, and the cutter *u* is used for rounding the inside of the rim. For finishing the back of the hub, the cutter *v* is removed from the boring bar *w*. This bar is then inserted through the bore, and the cutter *v* reinserted in its slot; the turret carriage is then backed away, and the rear end of the hub faced.

A method of finishing flywheels in two operations is illustrated in Figs. 2 and 3. This is a webbed wheel, and is finished all over. The first operation consists of the following steps: The piece is chucked at *a* on the inside of the rim with the regular inside hard chuck jaws, *b*. First, the cored hole is rough bored with the cutter *c* in the end boring bar. This bar is held in the drill holder, which is bolted to the main turret, and is supported by the drill support *d*. Next, the turret is rotated one face to the left, bringing the boring bar *e* into position (the drill support being thrown back out of the way). The bar *e* is supported in the chuck bushing *f*, while the two cutters, *g* and *h*, are used to rough out the hole preparatory to using the taper reamer *i* shown on another face of the turret. The small end of the hole is finished to within 0.002 in. by the cutter *g*. While boring with the bar *e*, the scale is broken on the web and hub of the piece with the tool post tools shown at *j* and *k*. The scale on the periphery of the piece is broken with the tool *j*. The hole is reamed with the taper reamer *i* supported in a bushing in the chuck, and a taper bushing, *l*, is then inserted for receiving the supporting arbor *m* in the facing head. The piece is rough faced, and turned with cutters *n*, *o*, *p* and *q* in the facing head. This brings the piece approximately to size. For finishing, the cutters *r*, *s*, *t* and *u* in the finishing head are used, this head being supported in the taper bushing *l*, while a light finishing cut is taken.

In the second operation, as shown in Fig. 3, the piece is chucked on the outside diameter with soft slip jaws, *b*, which are bored to the exact diameter of the piece. The piece is further supported in the hole by the sliding bushing *l*, which is held in the chuck bushing *f*. First, the scale on the web and inside of the face of the rim is broken with the tool post tool *k*. These surfaces are then roughed off with the cutters *q*, *o* and *p* in the facing head, the arbor *m* being inserted in the bushing *l* for supporting this head, and the piece is brought approximately to size. Finally, a light cut is taken with the cutters *u*, *r* and *t* in the finishing facing head, which completes the operation.

At the annual meeting of stockholders of the Harbison-Walker Refractories Company, recently held in the Farmers' Bank Building, Pittsburgh, the retiring directors were re-elected, with the exception of S. C. Walker, deceased, and W. A. Stanton, resigned. William Walker and N. McQuillen were elected to fill the vacancies. At the meeting of the board H. C. Croft was elected president to succeed S. C. Walker. Mr. Croft had been vice-president of the company, and Hay Walker, Jr., was elected to succeed him in that capacity.

The shipyards on the Great Lakes are busy, after a short period of quiet. The American Shipbuilding Company now has at work about 75 per cent. of the force of 10,000 men normally employed. Within 10 days three large freighters will be launched, making a total of five since January 1.

The Napier Continuous Cutting Hack Saw.

A very unique tool is the continuous cutting power hack saw machine, built by the Napier Saw Machine Works, 119 Liberty street, Springfield, Mass., in that it applies the principle of a band saw to the cutting of metals and saws toward instead of away from the application of power. Its capacity is unusual, the vise taking work of a section 5 x 12 in., and this may be increased by extending the vise for length and raising the position of the arm for width. An I-beam may be cut with the machine; in fact, one of its important purposes is the cutting of structural steel, which it does quickly and accurately as to angle. Economy is claimed for the tool, not only because there is no idle stroke, since the saw is continuously cutting and the wear on the teeth is equal throughout, but because the wear is greatly reduced, due to the absence of back motion.

The saw, which is 10 ft. long, is driven by two of the three sprocket wheels, which engage the holes cut in the band. A worm on the pulley shaft meshes a worm gear mounted on the sprocket shaft at the front of the ma-

Plating Small Articles with Brass.

The method followed in the United States for depositing brass upon small articles, such as cigar box nails, rivets and safety pins, is explained by Charles H. Proctor in the *Metal Industry*. The plating barrel is used, or a regular plating bath with woven wire baskets. The sides and ends are made of celluloid, hard rubber, hard wood, or some other nonconducting material. The bottom of the basket is made of woven brass wire of a mesh so small that the articles will not pass through. Heavy conducting wires should lead from the woven wire in the shape of hooks or supports to hang the baskets upon the negative pole while the depositing is being done. The following formula should be used for the bath:

Water, gallons.....	25
Cyanide of potassium, 98 per cent., pounds.....	25
Carbonate of copper, pounds.....	10
Carbonate of zinc, pounds.....	5
Carbonate of soda, pounds.....	4
Ammonia water, 26 per cent., pints.....	2 to 3

A voltage of not less than 6 should be used, with a

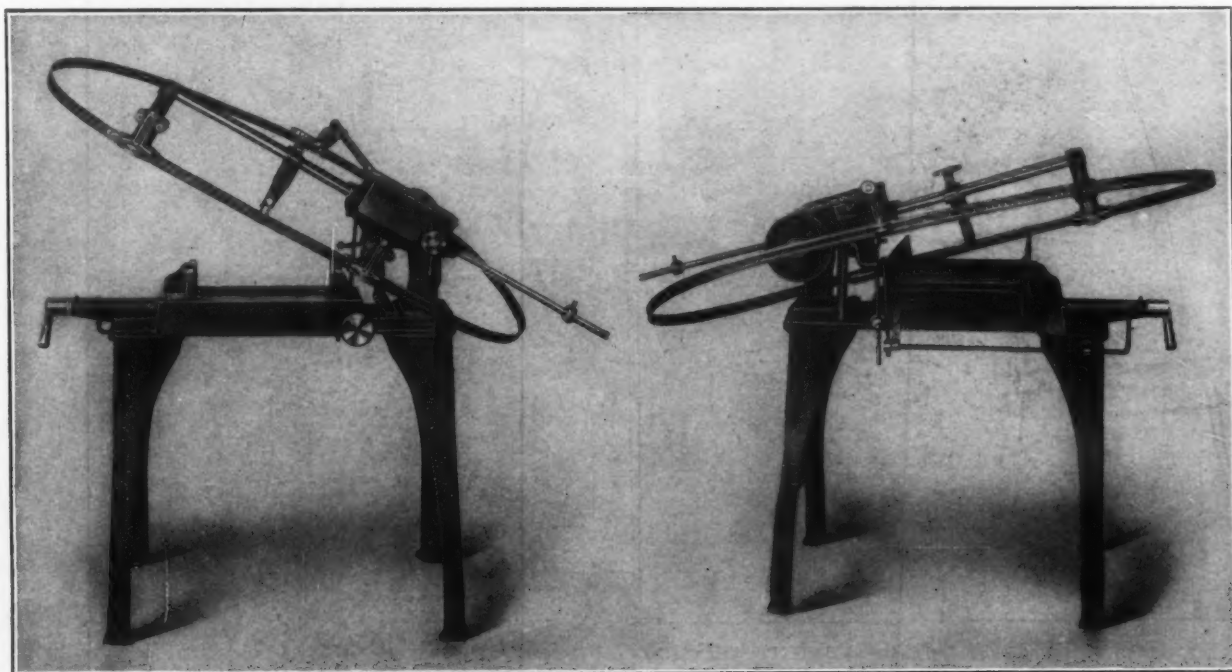


Fig. 1.

Fig. 2.

Views of the Opposite Sides of the Continuous Cutting Power Hack Saw Machine Built by the Napier Saw Machine Works, Springfield, Mass.

chine, Fig. 1. The worm gear also has bevel gear teeth, which engage a bevel gear driving the sprocket shaft at the rear of the head. The third sprocket mounted on a bracket at the end of the rod acts as an idler and also as a brake to maintain the saw in tension between it and the driving sprocket on the same side of the machine, the two points between which the cutting is done. The brake is a friction located in this idler. An additional guide is mounted on a bracket adjustable on the rod. Each of the sprockets has its idler on the opposite side of the saw blade, insuring engagement of the sprocket and saw. The feed of the saw is by gravity, as in other hack saw machines the degree of feed being determined by the weight at the end of the rod. Located in the driving pulley is a friction clutch to engage the pulley with the driving shaft. This friction is operated by an automatic knock-off, the moment of action of which is determined by the position of the stop on the vertical rod, seen in Fig. 2.

The General Committee on Co-operation in the Steel Trade has made the following additions to the subcommittee on Ore and Pig Iron: Frank S. Witherbee, 2 Rector street, New York; E. S. Cook, president Warwick Iron & Steel Company, Pottstown, Pa.; Charles H. Zehnder, president Allegheny Ore & Iron Company, 140 Cedar street, New York.

good amperage. The articles may be cleaned by tumbling in carbonate of soda water after the regular tumbling has been performed. A tumbling barrel may be used made up of wood and rotated slowly. The negative conductors should be small strips of copper. On the outside of the barrel are two copper bands. Provision is made by incisions in the barrel to make connections with the anode and the conductors in the baskets. The current is taken by the copper bands by spring contact strips, and thence to the anodes and cathode or basket. The time of deposit should be from 20 min. to half an hour. An angle barrel will be found the best and it should be of such size as to plate from 50 to 100 lb. at each immersion.

The Standard Steel Works Company, incorporated December 23, 1907, to take over the Standard Steel Works, Burnham, Pa., will sell at present only \$4,000,000 of the proposed \$5,000,000 bond issue. It is stipulated that the additional \$1,000,000 of bonds be issued only to provide further extensions to the plant. The Standard Steel Works was established in 1871, with a capital of \$100,000, and its mortgage indebtedness was \$100,000. All the profits for many years were turned back, and at present the property is valued at \$7,000,000. Burnham, Williams & Co., proprietors of the Baldwin Locomotive Works, own all the stock of the company, which is now \$3,000,000.

D'Amour's Improved 12-In. Sensitive Drill.

A more powerful drive than is provided in former drills of this type is one of the features of D'Amour's improved 12-in. bench drill press, illustrated in Fig. 1 herewith, and built by the Charles Ramsey Company, 135th street and Willow avenue, New York. The spindle pulley and the countershaft pulleys are of unusually large diameter, giving greater belt speed, and the spindle has a ball thrust bearing. Another feature is the manner of adjusting the idlers for the two different paths of the endless belt that connects the two-step pulleys on the

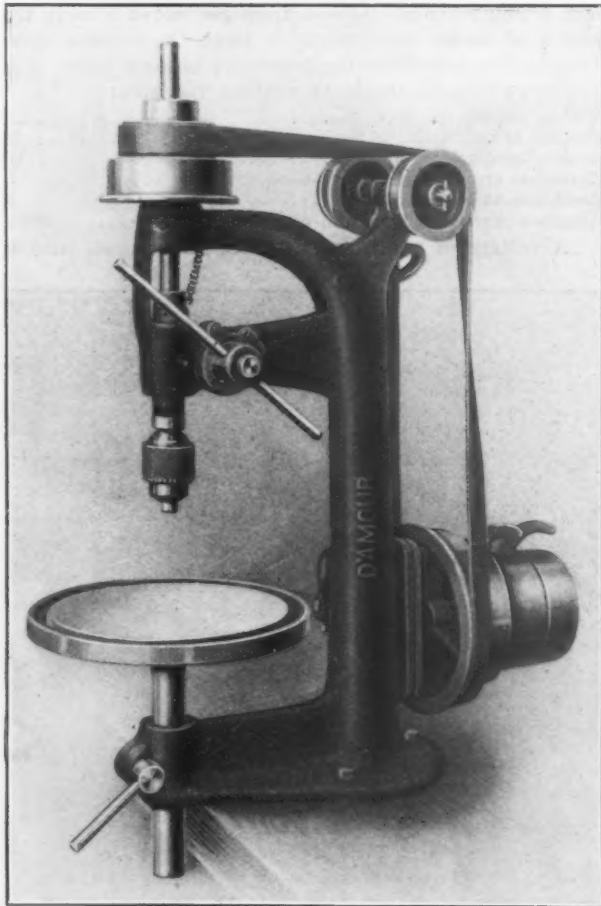


Fig. 1.—D'Amour's Improved 12-In. Bench Drill Press Made by the Charles Ramsey Company, New York.

countershaft and the spindle. As more clearly shown in Fig. 2, the idlers are mounted on a bracket carrying a quadrant that limits the oscillation of the bracket. At one extreme the idlers are in their highest and furthest forward position, causing the belt to align with the smallest step of the spindle pulley and the largest step of the countershaft pulley, giving the fast speed. Swinging the idlers to the opposite extreme lowers them the width of the belt and moves them rearward the same amount to properly guide the belt to and from the other two steps of the pulleys, corresponding to the slow speed. No provision is made in the idlers to take up the stretch of the belt; the countershaft pulleys are carried by a bracket that has a vertical adjustment, through which the belt may be tightened.

The pull of the belt is not transmitted to the spindle, as the driven pulley is carried by a quill, having an independent bearing. The spindle slides freely through this quill, but is feathered to rotate with it. The spindle is of open hearth steel, and is counterbalanced by a weight inside the frame, making the drill extremely sensitive and uniform to the touch. Means are provided for taking up wear or lost motion in the spindle bearings. As regularly furnished the machines have spindles fitted to receive 5-16-in. Almond or Jacobs drill chucks. If desired they are left plain or are fitted to any drill chuck submitted. On the spindle there is a nut above the taper upon which the chuck is fitted, for readily removing the latter.

The usual hand lever feed to the spindle through rack and pinion is provided, but instead of an adjustable stop mounted as a collar on the upper end of the spindle, the stop is applied directly to the hand lever or pinion shaft. This may be clamped at any angular relation, so as to contact with a fixed stop on the frame when the required drilling depth has been reached. It is thus possible to drill or counterbore any number of holes to exactly the same depth, and the device has the advantage that it does away with any tendency to spring the frame of the machine.

The table of the drill is 9 in. in diameter, and has an oil and chip retaining groove around the working surface. It may be revolved to any angle and raised and lowered a maximum of 5 in. The vertical adjustment of the spindle is 2 in. and the greatest distance from the spindle to the table is 8 in. Holes up to 5-16-in. may be drilled to the center of a 12-in. circle. The tight and loose pulleys on the countershaft are 4 in. in diameter by 1 1/4 in. face, and are intended to run at about 450 rev-per min. when drilling cast iron and soft steel. The countershaft being a part of the machine, it may be

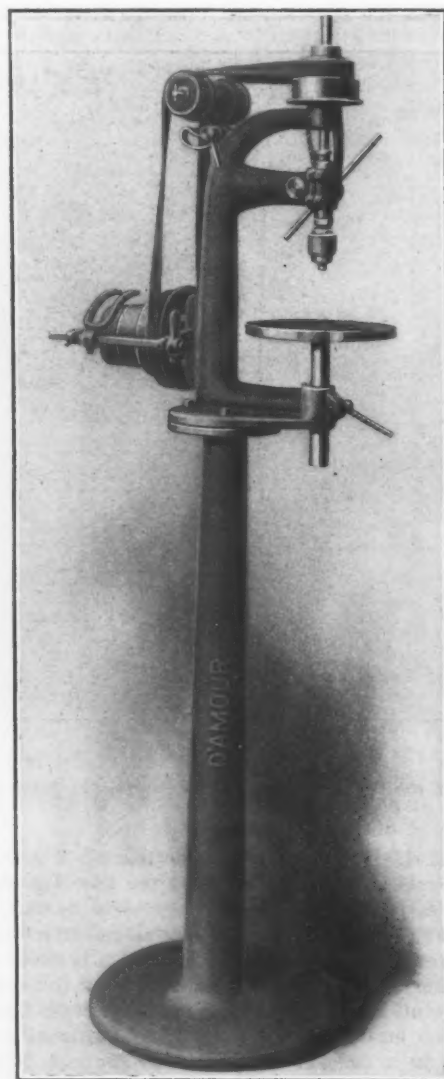


Fig. 2.—The Same Press Mounted on a Column, Showing the Opposite Side.

belted directly to the line shaft. The machine is carefully built, and the rotary parts are balanced so that it is allowable to run the spindle at a high rate of speed. Where it is not desirable to mount the drill on a bench it is supplied with a column, as shown in Fig. 2. The total weight with this column is 120 lb., and without it 60 lb.

The effort to form an association including the majority of the manufacturers in the United States of the small sized brass and copper tubes has been given up, one of the manufacturers participating in the preliminary conferences having withdrawn.

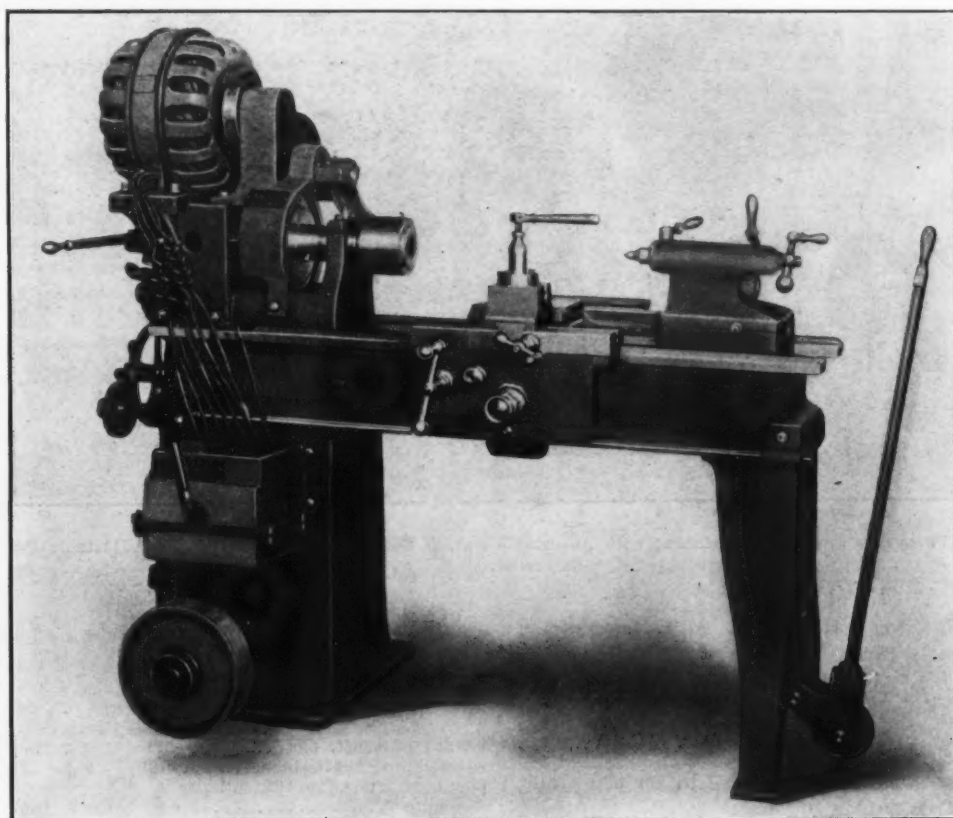
Westinghouse Motor-Driven Portable Lathe.

In an editorial in *The Iron Age*, January 9, 1908, "Progress in Machine Tool Design," comment was made of the increasing use of portable machine tools, which reversed the usual order of things in that the tool is brought to the work instead of the work to the tool. It was also remarked that electric drive has made such tools possible. That statement is well borne out in one of the latest examples of this class of tool, which is herewith illustrated, a portable motor driven lathe. It is particularly intended for turning bolts, and to be used in locomotive repair shops. The lathe was built by the Williams & Wilson Company, Montreal, Canada, and is equipped with a Westinghouse motor.

Two ways of transporting are possible. For short distances it may be rolled on the wheels upon which it is mounted, or it can be lifted by a crane and placed beside an erecting pit and then shifted to the exact position desired by hand. When in working position the

be moved to some point in the shop where it will be out of the way of the workmen, and at such times it may be used as a convenient auxiliary to the regular machine shop equipment.

Increasing Use of Storage Batteries.—It is predicted by the *Electrical World* that the use of storage batteries will increase greatly in the next few years. It cites the belief of many engineers that the steam turbine marks only a transition period in prime movers, which must give way to the internal combustion engine because of the superior economy of the latter. The gas engine has no overload capacity; it operates best when delivering a steady amount of power, and is liable to give trouble when worked on light loads. The storage battery affords the required flexibility in respect to variations in the external load while maintaining a constant load on the generating equipment; as one writer puts it, "the storage battery is the natural consort of the gas engine." An extended use of gas engines for driving electric generators



A Portable Lathe Built by the Williams & Wilson Company, Montreal, Canada, Equipped with a Westinghouse Motor.

single wheel at the tail end is deflected by lifting the tongue handle so as to allow the two rear legs to rest on the floor. The weight of the lathe is then sufficient to keep it from moving unintentionally during its operation.

An alternating current induction motor is applied on the machine illustrated and is of 2-hp. size, intended to run at 1700 rev. per min. Through a friction clutch and change gears it is connected with the lathe spindle, so as to drive the latter at either 200 or 400 rev. per min. When desired the machine is equipped with a direct current motor, and one of variable speed form may be selected to give a wider range of speeds for the spindle.

There are located about the shop at convenient intervals plug receptacles for connecting the motor through flexible cables to the electric current supply, and a simple and convenient plug is attached to the cable for that purpose.

The particular utility of this machine is that it enables the turning of each individual bolt to the exact size required in the place it is to be used, and saves the time which is ordinarily lost in making trips to and from the machine shop to get exactly what is wanted. At the same time the mechanic is allowed to carry on his work without interruption. When not in use the machine can

will undoubtedly be attended by a corresponding increase in storage battery work.

The Pittsburgh & Lake Erie Railroad, which was one of the first roads to use steel freight cars extensively, now has 55 per cent. of its cars of steel construction. This road has paid particular attention to the development of an economical system of repairing steel cars for several years, doing its work in the open and having few special facilities. At its McKees Rocks, Pa., shops it has now an extensive car repair department, equipped with special devices for expediting work on steel cars. A spraying machine is used in painting steel work. The company has 4174 twin hopper gondola cars, 3216 hopper cars, 1600 coke cars, 117 flat cars, all of steel, and 250 composite gondola cars with steel underframes.

Owing to the dullness in the iron market, the blast furnaces in the Broad Top Mountain District of Pennsylvania have nearly all blown out. The Colonial or Riddlesburg plant is now the only one running, and a shutdown is probable there. The Rockhill and Earlston furnaces went out a number of days ago, and the No. 2 Saxton furnace of Joseph E. Thropp has just been banked.

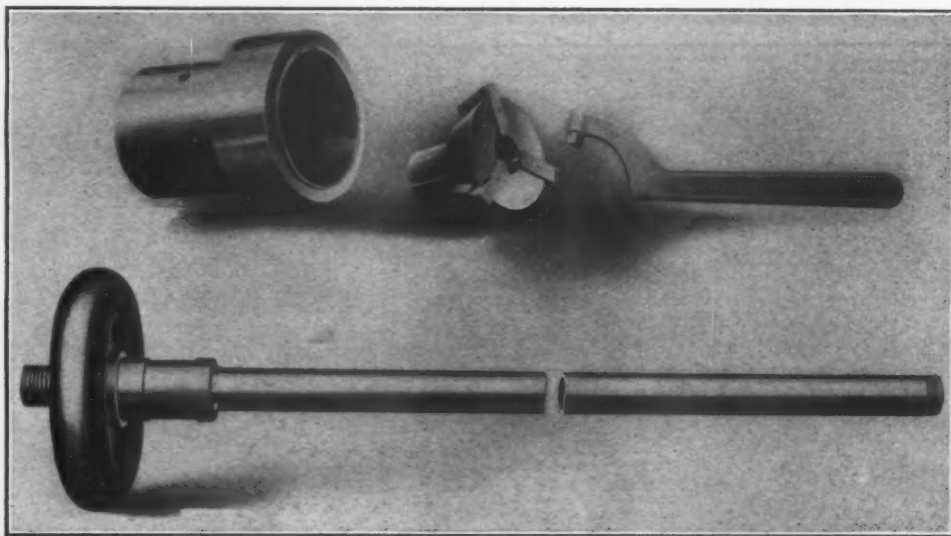
The A-C Adjustable Collet Lathe Attachment.

For holding small work in engine, speed or turret lathes, or end mills in vertical or horizontal milling machines, the device illustrated has been brought out by the Adjustable Collet Company, 224 High avenue, Cleveland, Ohio. It is known as the A-C draw in attachment, with adjustable spring collet chuck, and by replacing a full set of spring collets, as they are now made, it does away with the bother of changing from one size to another, since it will grip any diameter of stock over or under size within its range.

The hood is threaded for screwing directly to the spindle of the lathe and the adjustable spring collet is fitted into the hood, which insures its running true. The device is very easily attached to or detached from a lathe or other machine by the use of a spanner wrench, which

Shafting Friction.

Interesting data concerning the friction load of shafting in an electrically driven machine shop when equipped with Hyatt roller bearings are given in bulletin No. 103, recently published by the Hyatt Roller Bearing Company, Newark, N. J. The figures are from official tests made in the locomotive shops of the Buffalo, Rochester & Pittsburgh Railway Company at Du Bois, Pa. This part of the test was incidental to a more complete investigation into the amount of power used by various machine tools when operating in regular routine work, and it was found by using group drive as here employed there was a saving of from 40 to 50 per cent. in the amount of power that would have been required in individual motors. The line shafts are cold rolled steel carried on Hyatt roller bearings. There are five lines of



The Separated Parts of a Draw-In Attachment with Adjustable Spring Collet Chuck, Made by the Adjustable Collet Company, Cleveland, Ohio.

is furnished with it for that purpose. Adjustment of the size of the collet is effected by turning the hand wheel to the right or left on the threaded portion of the draw tube.

These collets are made in three standard sizes: For 12 and 14 in. lathes the capacity is from $\frac{1}{8}$ to $\frac{3}{4}$ in., inclusive; for 16 and 18 in. lathes, $\frac{1}{8}$ to 1 in. inclusive, and for 20-in. lathes, $\frac{1}{8}$ to $1\frac{1}{2}$ in. inclusive. These figures refer to the passing capacity, or the opening of the jaws furnished for bar stock. All sizes are made with step jaws to take work of greater diameter, such as castings, collars or other work too large to be passed through the hole in the spindle. The attachments are also made to fit any special size not above mentioned and to meet the requirements of any size or make of lathe. In ordering it is necessary to specify the diameter, length and pitch of the thread on the spindle, and the length of draw bar required.

Results With Iron Crucibles.—Referring to the experience of brass foundries in the use of iron crucibles, instead of graphite, in melting aluminum, the *Brass World* says: "Iron crucibles have been used to some extent by the large aluminum foundries, not because they possess any particular advantages, but on account of their low cost. They have been used for melting large quantities of aluminum, and in instances where a large graphite crucible would not give the best results. Graphite crucibles larger than No. 300 are rarely used, and it is in cases where much larger melts are to be made than such a crucible would hold, that the iron crucible has been employed. It has been found, however, that the aluminum attacks the iron and not only becomes deteriorated itself, but injures the crucible. The crucible, too, frequently cracks. As far as we can ascertain, the experience with them has not been such as to warrant their extensive use."

shafting, of which the following gives a summary of the data concerning each:

	Wheel sec- tion.	Boller sec- tion.	Lathe sec- tion.	Tool sec- smith tion.	Black- smith shop.
Length of shaft, feet.....	200	170	180	140	75
Diameter of shaft, inches.....	2½	2½	2½	2½	2½
Speed of shaft, revolutions per minute	160	158	155	155	..
Number of hangers.....	26	19	22	20	12
Power of driving motor, horse- power	40	30	30	20	40
Number of tools driven.....	13	11	22	20	9
Power consumed by shaft alone, horsepower .....	..	0.3	0.7	..	..
Power consumed by shaft and counters, horsepower.....	1.5	2	4.1	2.8	..
Power consumed by shaft and counters, a grindstone and two blowers, horsepower.....	..	..	..	..	14.5

For the wheel section, tool section and blacksmith shop line shafts, it was inconvenient to obtain a test of the line shafts alone. In the third case it was necessary also to run a grindstone and two blowers, as noted. These tests were carried out by H. M. Palmer and George H. Gibson of the Westinghouse Electric & Mfg. Company by permission of F. T. Hyndman, master mechanic, and with the assistance of C. D. McArthur, chief draftsman of the Buffalo, Rochester & Pittsburgh Railway Company.

The total trade of the Dominion of Canada for the calendar year 1907 was \$658,599,974, as compared with \$594,319,289 for 1906, an increase of \$64,280,685. The total imports were \$385,275,360, an increase of \$60,433,675; total exports \$273,324,614, an increase of \$3,847,010. The total exports of domestic produce were \$238,015,557, a decrease of \$730,765. The total exports of foreign produce amounted to \$35,309,057, an increase of \$4,577,775.

The Hendershot Coupling.

Several new features which give it great strength and facilitate its quick and convenient application are found in the Hendershot coupling, now being introduced by Manning, Maxwell & Moore, Inc., 85 Liberty street, New York. The general appearance of the coupling assembled is shown in Fig. 1. The component parts are shown in Fig. 2 and in Fig. 3 the method of application is shown.

Two short taper compression sleeves, S, S, Fig. 2, are provided, which make it possible to put the two halves

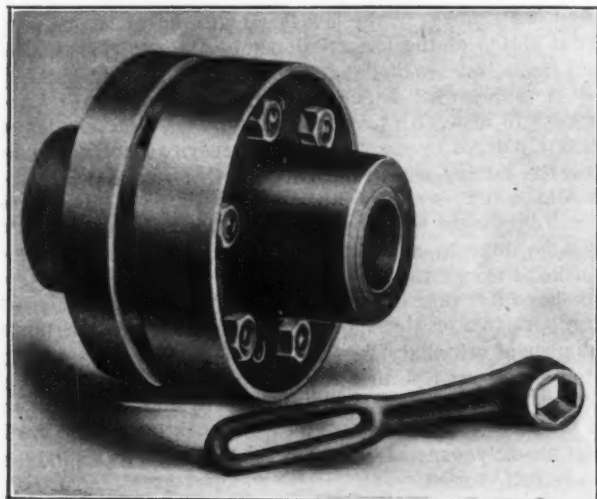


Fig. 1.—Assembled View of the Hendershot Coupling.

a and *b* parallel. The coupling is easily taken apart by screwing two bolts in holes that are tapped in the shell for the purpose.

In connecting shafting together this coupling enables time to be saved, especially in a new factory, where it is not convenient to start up to see how the line runs. This feature will appeal to millwrights and mechanics, who have had experience in coupling shafting with compression couplings of the single sleeve type, and to mill owners, as the time saved in using the coupling is quite an item. If put on properly the shafting cannot be sprung.

Slight inequality in size, or disparity of alignment, or both, is of no consequence, as the coupling will adjust

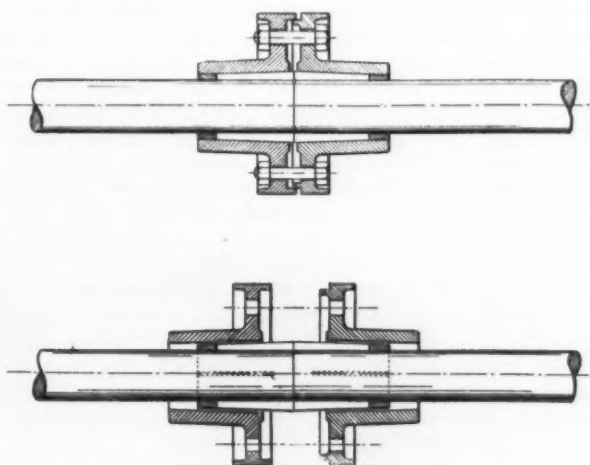


Fig. 3.—Sectional Views of the Coupling Connected and in Process of Connecting.

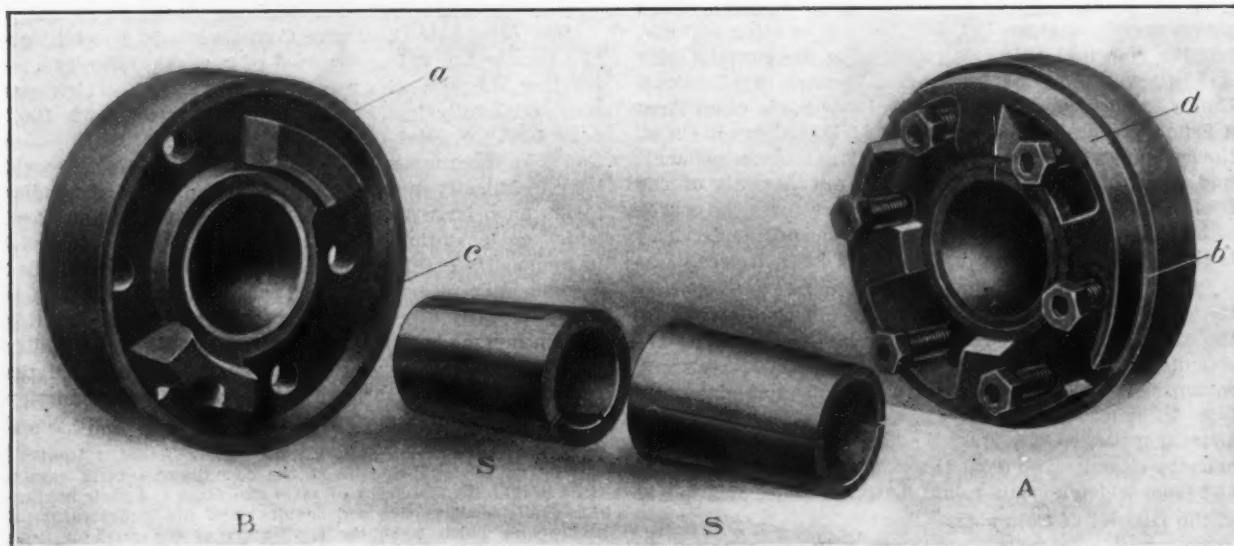


Fig. 2.—The Separated Parts of the Hendershot Shaft Coupling, Sold by Manning, Maxwell & Moore, Inc., New York.

of the coupling in place while the shafting is on the floor, so that it may be hoisted into position and bolted together as easily as the old fashioned plain flanged coupling. The shells A and B, Fig. 2, contain cast lugs which, interlocked, from a clutch, which puts all torsional strain upon the shells, leaving the bolts in tension only and making a rigid and durable connection. Although the bolts are subject to no shearing strain, six are used where generally four are considered sufficient. This is in keeping with the very large compression area of this type of coupling and the unusually large factor of safety provided.

In applying the coupling the shells A and B are slipped upon the shafting first. Then the sleeves S and S are put into place, so that the shells may be drawn over them. The lugs of shells A and B are brought into interlocking position and the shells are bolted together. The fitting surfaces *c* and *d* practically true up the coupling, but perfect alignment is insured by keeping the two faces

itself and the compression will be the same the full length of the sleeve, which is not possible when the sleeve is one piece. The sleeves are made thinner and the hubs heavier, thereby greatly increasing the strength without increasing the outside diameter of the coupling. The coupling is made of the best gray iron, and is heavy enough to withstand all strains. Every coupling is put together on a test pin and inspected before it leaves the factory.

The subject of trade schools is attracting considerable attention among Cleveland manufacturers, and the matter will be discussed at a smoker and informal meeting of the Cleveland Branch of the National Metal Trades Association and other manufacturers of the city, to be held at the Hollenden Hotel, on the evening of January 31. J. H. Cone of Cincinnati will give a talk on "The Operating Trade Schools of the Country," outlining some plans for consideration and possible adoption by the Cleveland manufacturers.

Patent and Trademark Legislation Proposed.

WASHINGTON, D. C., January 27, 1908.—Eight important bills amending the patent and trademark laws of the United States have been presented in Congress, and it is understood that the House Committee on Patents will take them up for consideration at an early date. These include a bill creating a court of patent appeals; another reorganizing the Patent Office and increasing the salaries of the employees thereof; a third providing an appropriation for a new and commodious building, and a series of five measures amending the statutes relating to the allowance of patents and the registration of trademarks.

The proposition to establish a United States Court of Patent Appeals has been strongly urged by the various patent bar associations and by many owners of patents and trademarks. The bill recently introduced by Senator Beveridge of Indiana provides a tribunal of five judges to be designated by the United States Supreme Court from among the judges of the United States circuit and district courts, to have exclusive jurisdiction "to hear and determine appeals and writs of error from final judgments and decrees in the circuit courts of the United States," in cases arising under the patent and trademark laws. The necessity for such a tribunal grows out of the fact that under the present laws it frequently happens that the lower courts in two or more different jurisdictions will render diverse decisions with regard to the same question, and, there being no constitutional issue involved, these decisions cannot be harmonized by an appeal to the United States Supreme Court.

Amendments to Patent and Trademark Laws.

The five bills for the amendment of the patent and trademark laws, which are now pending, have been very carefully drafted by the Commissioner of Patents. Each makes certain changes in the text of the existing statutes, but the principal object is to expedite the consideration and allowance of patent and trademark applications. Under the present law appeals lie in *ex parte* cases from a primary examiner to the Board of Examiners-in-Chief, thence to the commissioner (or assistant commissioner), and from his decision to the Court of Appeals of the District of Columbia, and in interference cases the course of appeals from decisions of the examiner of interferences is the same, there being three appeals in each case.

The purpose of the proposed amendments is to shorten the course of prosecution by the elimination of one of the appeals within the office. This is designed to be accomplished by combining the commissioner, assistant commissioner and Examiners-in-Chief into a single appellate tribunal, any three of whom shall constitute a quorum, to which all appeals shall lie, whether from a primary examiner or from the examiner of interferences, and from which appeals would lie to the Court of Appeals of the District of Columbia.

The Board of Examiners-in-Chief as at present constituted consists of three members, and no provision is made under the present law to supply a temporary vacancy caused by the sickness or absence from other cause of any of the members. The absence of one member often results in an evenly divided Board, with the consequent necessity for a rehearing, and the absence of two members causes an entire suspension of business. With the proposed membership of five, the presence of a quorum of three would be practically assured at all times, which has not been the case in numerous instances in the past, owing to frequent absences of a member of the Board on account of periods of illness of greater or less duration and also by reason of annual leave and other causes.

The existing trademark law provides for appeals from the Examiner of Trademarks and from the Examiner of Interferences in trademark cases directly to the Commissioner (or Assistant Commissioner). From these tribunals appeals lie to the Court of Appeals of the District of Columbia, as in patent cases. The amendment submitted merely substitutes the proposed Board of Appeals for the Commissioner as the appellate tribunal of the Office, in cases relating to trademarks, making the course

of appeals in this class of cases conform to the course of appeals recommended above in cases involving applications for patents.

These changes in the course of appeals would not only have the effect of expediting the prosecution of applications on appeal, but would be a saving to the inventors of one appeal fee, the attorney's fees, and other expenses incident thereto. Furthermore, having but one appeal within the office in lieu of two would result in giving greater stability to the decisions of the office tribunals, and would also obviate any want of comity that has existed in the past between the decisions of the Commissioner of Patents and the Assistant Commissioner. These proposed changes in the law in no wise affect the present legal status of the Commissioner of Patents, the Assistant Commissioner of Patents or the Examiners-in-Chief.

It is regarded as improbable that the present Congress will look with favor upon the proposition now being strongly urged by many patent attorneys and others making the infringement of a trademark a criminal offense. While many Senators and Representatives have been much impressed with the argument that no greater injury can be done to a property owner than may be accomplished through the piracy of a trademark, yet the majority have felt that in view of the important legislation of the past two or three years, which has created a large number of criminal offenses under Federal enactment, the time is not yet ripe to add another crime to the category. There has also been a feeling that it would be unwise to make so radical a departure in trademark legislation until the recently enacted Bonyng trademark law should be more fully tested.

W. L. C.

The Application of Commodity Tariffs to Intermediate Points.

The Interstate Commerce Commission, in Special Tariff Circular No. 6, has disposed of a grave difficulty confronting shippers who use commodity tariffs, which was considered fully in *The Iron Age* of December 12, 1907, page 1685. Special Circulars Nos. 3 and 5, which were issued by the commission in October and November, would have technically invalidated the application of commodity tariffs on a large volume of shipments of iron and steel, which go to stations that are not specifically mentioned in commodity tariffs. The railroads have always applied a commodity rate to any "intermediate" point which is not specifically given a lower rate in the tariff, and this custom has made it unnecessary, in compiling commodity tariffs, to mention every station on the road, or all the roads covered by a through rate tariff. The commission has reconsidered the question in Special Circular No. 6 as follows:

The underlying principle of the commission's tariff regulations is that the statement of rates and fares and their application shall be affirmative and definite; and the incorporation of tariff rules which make the application of the rates or fares uncertain is prohibited, as is also any method of stating rates or fares which is ambiguous.

Many tariffs that were on file before May 1, 1907, contain long and short haul clauses, maxima rules, alternative rate or fare provisions, or other rules which make the application of the rates or fares uncertain, more particularly as to intermediate stations not specified in the tariff; and some such rules have, through misunderstanding, been included in tariffs which have been issued since May 1, 1907. Some carriers whose tariffs do not contain rules of the character in question have followed the practice of applying tariff rates or fares as maxima at intermediate stations except when tariffs specifically provide to the contrary.

The commission desires and requires that at the earliest practicable date all such features and practices as are above referred to shall be eliminated from tariffs and discontinued either by supplement or by reissue of the tariff. It does not underestimate the volume of work in checking of rates and fares and preparation of tariffs that is involved; it appreciates the efforts and the progress that have been made thus far; and as an aid in simplification and directness in providing and applying lawful tariff charges, and to avoid hardship to shippers and passengers at intermediate stations which would otherwise be left without rates or fares which they have heretofore enjoyed, and with the understanding that this work will be earnestly pursued with the purpose of completing it by the date named, the commission decides that until July 1, 1908, carriers may continue the use and present application of tariffs which were issued prior to January 15, 1908, and which contain rules of the character hereinbefore referred to, or under which, without specific

provision in the tariff therefor, the rates or fares have been applied at intermediate stations, and excepting those tariffs which, before July 1, are corrected by supplements or replaced by new issues. Tariffs issued subsequent to January 15, 1908, must not contain any such rules as are herein considered nor be applied in any manner not affirmatively provided therein.

Each carrier that has tariffs containing any of the rules referred to, or which, without containing such rules, are applied at stations not specified therein, will, on or before February 1, file with the commission a statement showing by Interstate Commerce Commission numbers all of the tariffs of its issue which contain such rules or which are so applied. This list shall contain both local and joint tariffs that are issued by the carrier making the list; and similar lists of their issues will be furnished on the same dates by joint agents who issue tariffs for carriers. Revisions of these lists will be furnished to the commission on April 1 and on June 1, from which will be omitted such tariffs as have been corrected or reissued.

These statements, when checked against the commission's tariff file, will indicate the progress that is being made in this work, and unless satisfactory headway is shown the commission may order the immediate reissue or cancellation of tariffs in question.

Paragraph *d* of Rule 4 and paragraph *c* of Rule 25, Tariff Circular 14A, provide that a tariff shall contain complete alphabetical indexes of the stations from and to which it applies. This is not to be understood as prohibiting the incorporation in a tariff of a rule providing for the affirmative and definite application of the rates or fares named in that tariff to stations not indexed and which are directly intermediate on the same line with stations that are indexed.

The permission for issuance on less than statutory notice of tariff supplements for the purpose of eliminating rules of the character referred to and of making tariff rates or fares definitely and affirmatively applicable, as given in commission's Special Circular No. 3, Tariff Department, of October 9, 1907, and extended in Special Circular No. 5, Tariff Department, of November 15, 1907, and in further extension notice of December 21, 1907, is hereby revoked, effective January 15, 1908.

A Notable Factory Power Plant.

Except where factories purchase electric current from an independently operated central station, it is unusual to find an isolated power plant. Mines and other works, distributed over a considerable area, find the practice expedient, or even necessary, but it is seldom that factories, particularly in proximity to large cities, avail themselves of the advantages that many accrue from removing their power plants to a point where the existing conditions are more favorable to their operation. An instance of the sort is the new power station of Walter Baker & Co., Ltd., at Dorchester, Mass., near Boston.

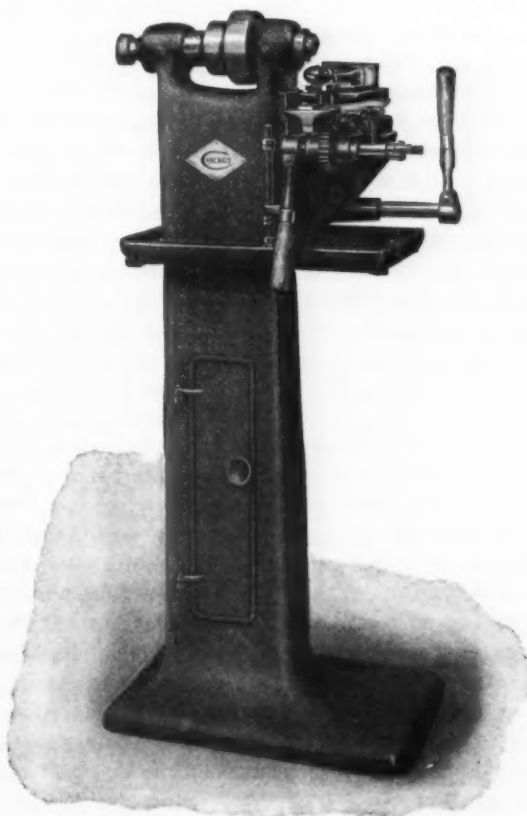
At the place mentioned, are three large mills manufacturing chocolate and cocoa products, each of which formerly had an independent steam plant. The greater economy to be realized by combining them in one station has led to the erection of a new plant at a little distance from the mills on the Neponset River, where an ample supply of water for boiler feed and condensing, and convenient railroad connections for receiving fuel are available. An ultimate capacity of 2800 hp. in boilers and 1750 kw. in electric generators has been planned for; the initial installation for present requirements, which call for less in steam generating capacity, includes 10 vertical fire tube boilers of 200 hp. each, and all of the power units—two vertical cross compound engines directly connected to 750-kw. generators, and two single horizontal engines directly connected to 125-kw. generators. The engines and generators were built by the Allis-Chalmers Company.

A feature of the engine installation is the use of reheaters for the compound engines, using the hot gases discharged from the boilers, before they are passed through the Sturtevant economizer. The remainder of the equipment is complete and modern in all of its details, including surface condensers, separators, feed and circulating pumps, feed water heaters, engine room crane, exciters, oiling system, telpherage system for handling coal from the storage yard, &c. A low pressure steam supply is furnished for manufacturing purposes and heating, taken from the exhaust of the non-condensing auxiliaries and augmented, if demanded, with live steam, through reducing valves. For security against shutdown, elaborate provisions are made in alternative ways of operating, with bypasses, ring mains, duplicate means of feed supply, &c. Power is generated as alternating current at 600 volts and used directly, or stepped

down where necessary, for power and lighting. Both individual and group driving is employed, using induction motors entirely, of which there are about 100, ranging in size from 1 to 75 hp. Recording meters measure the power supplied to each department separately. The power plant and new power and lighting equipment of the mills were designed and installed under the superintendence of F. W. Dean, mill engineer and architect, Boston, Mass.

The Chicago Bench Miller.

The bench miller herewith illustrated as mounted on a column differs but slightly from the No. 1 hand miller made by the Chicago Machine Tool Company. Principally, it is simpler because the overhanging arm and vertical milling attachment are omitted. While in the larger machines the outboard support for the arbor is essential, and the vertical spindle increases the range of work that can be handled, neither is required in the manufacture of light work, such as parts of guns, sew-



A Bench Miller, Column Mounted, Made by the Chicago Machine Tool Company.

ing machines, typewriters, locks, electrical apparatus, &c. This machine is especially intended for that class of work, which consists for the most part of short milling and slitting operations.

The machine and countershaft are equipped with the Chicago dustproof and self-oiling journals, which require oil only once in nine months or more and add materially to the life and accuracy of the spindle. The table has a feed of 9 in. longitudinally, by $2\frac{1}{2}$ in. transversely, and the vertical movement of the knee is $4\frac{1}{4}$ in. The spindle is bored to receive a No. 9 B. & S. taper, and a collar arbor can be used. A sleeve is fitted to the spindle to take a drawing in collet. The countershaft is self-oiling and has two speeds, giving six spindle speeds to the machine through three step cone pulleys. The regular equipment consists of a quick acting vise, a drawing-in sleeve, one collet and the necessary wrenches.

The Chicago line of millers is carried in stock by Hill, Clarke & Co., Inc., Boston, Chicago, New York and Philadelphia; the Prentiss Tool & Supply Company, Buffalo, N. Y., and the Cotton States Belting & Supply Company, Atlanta, Ga.

THE IRON AGE

Established in 1855.

New York, Thursday, January 30, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHER
14-16 PARK PLACE, NEW YORK						
DAVID WILLIAMS,	-	-	-	-	-	PRESIDENT
CHARLES KIRCHHOFF,	-	-	-	-	-	VICE-PRESIDENT
RICHARD R. WILLIAMS,	-	-	-	-	-	TREASURER
GEO. W. COPE,	-	-	-	-	-	SECRETARY
CHARLES KIRCHHOFF,	-	-	-	-	-	EDITORS.
GEO. W. COPE,	-	-	-	-	-	
A. I. FINDLEY,	-	-	-	-	-	
RICHARD R. WILLIAMS,	-	-	-	-	-	
						HARDWARE EDITOR.

Price Questions Go Back to Ore.

The question of the right price for finished forms of steel, on which the manufacturers have been unitedly seeking light, has resolved itself rather early into an ore problem. This may seem strange when it is known that only a small fraction of the Lake Superior ores that eventuate in some form of steel ever comes upon the market, and that almost all the steel making ores are mined by the steel companies themselves or by the leading producers of such Bessemer pig iron as is sold to steel makers. It is a fact, nevertheless, that the steel manufacturers are now disposed to regard the price the merchant ore firms at Cleveland will ask for 1908 as the pivot on which the market will turn. Much of this ore is bought by furnaces making foundry iron. It cannot have a direct relation to the price of finished steel. Therefore the inference is that the market is in such shape that the moral effect of the merchant ore price this year will be much greater than usual.

Pig iron and finished products, for well known reasons, did not follow parallel price lines in the late boom. But there is a disposition now to let pig iron, which is a product of so many widely separated and unaffiliated interests, show the way to the steel manufacturers, whose present concern is to know what changes, if any, should be made in their prices. Raw materials and labor are the chief items on the cost sheet. Eastern and Central Western producers of merchant pig iron find that the reductions thus far made in the price of their product have brought them to a point at which the ore on hand can be worked up at bare cost. Further reductions in pig iron, they argue, will mean a sacrifice on every ton of ore entering into such iron. If their Southern competitors, most of whom, though not all, mine their own ores, are to push for Northern business to the extent of making further reductions in prices, this can only be met by such concessions on ore prices for 1908 as will scale down the cost of the six or seven months or longer supply of ores on hand. But Southern furnacemen seem no more anxious than Northern to load up with unprofitable business, after three years of fair profits for most of them.

The question comes, therefore, what action can be taken by the merchant ore companies that will not demoralize the market and at the same time will recognize the changes that have come in the situation since the high ore prices of last year were named? It is argued by the steel manufacturers that any considerable reduction in merchant ores now will naturally strengthen the expectation of lower prices for rolled products when the next buying movement comes. An unusual responsibility

is thus put upon the ore men. They had thought to postpone the issue until the situation had developed more. If pig iron production continues at anything like the present rate through the first half of the year, no new ore would be needed before fall, and therefore ore buyers would be in no hurry to make new contracts. But for the reasons indicated above, pig iron producers in the East and Central West have reached a point at which they want to know what the ore programme is to be.

As in 1904, when a somewhat similar situation arose, the steel companies consider that their interests will be best served by making no decided cut in the ore prices of 1907. Some of the merchant ore producers, moreover, have been represented as now averse to any considerable reduction from last year's prices. They argue that their labor and transportation costs have not been reduced as yet, and that the value of all ores has been enhanced by the developments of the past two years in iron ore, without reference to anything that has occurred in the steel market. It is also urged that many mine leases made in recent years when prosperity was at high tide, carry minimum outputs that will mean a large payment for every ton of ore that can be marketed in a lean year like the present. Consideration is given, too, in this view, to the fact that the pig iron market would quickly anticipate the lower ore basis, which would mean that furnacemen must write off heavily on last year's ores.

It would be surprising, however, if in the end, the merchant ore firms take a different position from that which they maintained in 1904 when the situation was in many respects similar to that of to-day. Then they separated from the steel companies and the furnace interests producing their own ore and insisted on a substantial reduction from the basis of 1903. Their principal reason was that the furnaces buying their ores were in close competition with Southern foundry iron furnaces, and if concessions were not made the Northern markets would be overrun with Southern iron, in some cases to the permanent displacement of a portion of the Northern product.

It will be interesting to note in this connection how the prices for Lake ores last year compare with those of 1903, also the prices finally fixed in 1904:

	1907.	1903.	1904.
Old Range Bessemer.....	\$5.00	\$4.50	\$3.00 to \$3.25
Mesaba Bessemer.....	4.75	4.00	2.75 to 3.00
Old Range non-Bessemer..	4.25	3.60	2.60 to 2.80
Mesaba non-Bessemer....	4.00	3.20	2.35 to 2.50

It should be said that the above prices for 1904 were fixed after Southern iron had sold as low as \$9, Birmingham, for No. 2 foundry, and after Bessemer iron had sold below \$13, at Valley furnace, or more than \$3.50 in the one case and more than \$4 in the other, below the pig iron prices of to-day. On the other hand, it is to be considered that the ore prices for 1907, which were fixed in November, 1906, were based on \$22 Bessemer pig iron, at furnace, or \$5 a ton above the price in November, 1905, when the ore prices fixed for 1906 were 75 cents a ton below those of 1907 for Bessemer ores. On No. 2 foundry iron the prices ruling in November, 1906, were \$21 to \$22 at Northern, and \$18 to \$20 at Southern furnace, these representing advances of \$6 to \$6.50 in the preceding year, in which the prices on non-Bessemer ores were 50 cents lower than those fixed for 1907.

The history of Lake Superior ore prices is a record of fluctuations, determined for the most part by conditions existing in the pig iron market at the time each year's figures are named, taken in connection with the outlook for the year through which the ore contract will run. If a serious attempt should now be made to fix ore prices independently of changes in the pig iron market

and with a direct purpose of steadying pig iron and finished materials, the outcome will be watched with the greatest interest.

New Ruling on Commodity Rates.

The Interstate Commerce Commission has taken a step that will receive the approval of shipping interests, in reconsidering and revising its administrative rulings on the application of commodity rates. The commission may have found it embarrassing to recall the authoritative circulars which it issued in October and November, but its prompt action in reconsidering the subject will go far to win the confidence of many shippers who have had grave fears of the difficulties that might arise from arbitrary rulings which have the force of law. An article on "Intermediate Freight Rates" in our issue of December 12, 1907, pointed out fully the difficulties that shippers of iron and steel and other commodities would experience if buyers at "intermediate" points, which are not mentioned in commodity tariffs, were cut off from the benefits of commodity rates and forced to pay prohibitory class rates. Under the new circular which the commission has issued shippers will be protected in the enjoyment of rates which they have had heretofore, and the long and short haul clause of the law will be observed by the carriers.

Congress has given to the Interstate Commerce Commission greater power over the business affairs of the people than has ever before been vested in a small body of men in any constitutional government. The powers of the commission are primarily judicial and administrative, but it has also been given legislative powers of no small scope, regarding the constitutionality of which there is some question. The transportation business of the country is so vast and complex, and many of its tariff adjustments are so delicately balanced, that what Congress intended merely as power to make administrative rulings or regulations is, in fact, a legislative function of large possibilities. Legislatures are generally held in check by constitutional provisions, which require several public readings of a new bill and final executive approval before it becomes a law, but the vast powers which the commission may exercise in administrative rulings may become effective without notice to the public and without hearings for those whose property interests may be affected adversely. A century ago the people would have scorned to place so much responsibility in the hands of any commission or administrative body, and it is evidence of the growth of confidence in the integrity and judgment of public men that this vast power has been conferred upon the Interstate Commerce Commission.

The members of the commission have justified public confidence by the painstaking and impartial manner in which they have endeavored to deal with all complaints and questions of policy that have come under their consideration. While they have made mistakes and have announced rulings which have proved a hardship to small as well as large shippers, and the general tendency of their rulings has been to increase the earnings of the carriers rather than to reduce the cost of transportation to the industries of the country, it must be conceded that the commission has labored with earnestness and zeal to perform the great task committed to it, and no disappointed litigant has yet had occasion to question the impartiality of its tribunal.

A court is bound by traditions and cannot send out an open invitation to all parties interested to appear and discuss for its information any case that may be pending.

Legislatures may seek light in this manner, through committees, but the members who vote to pass a measure seldom read the full reports of these committees. The Interstate Commerce Commission, however, is bound by no traditions, and it has acted in a manner that commends itself to all impartial men by the earnestness with which it seeks and is governed by light from all parties on important questions involving the traffic of the nation. Let us hope that the great powers of the commission may always be exercised by men of the high character of its present members.

Machinery Lists in Industrial Plants.

If the advantage of keeping complete machinery data was more generally appreciated by industrial superintendents much less delay and trouble would be encountered when equipment problems arise. Some plants have well kept lists of machine tools, hand operated devices and general supplies, but in others is found a deplorable lack of specific recorded information, either in the company's general offices or in the headquarters of different departments. Electrical machinery data when wanted are easily taken from the manufacturers' name plates, but even this work would often be saved if when the machine was first installed the essential particulars of the equipment were recorded in a card index, loose leaf book, or an ordinary ledger. For general machinery such data certainly should be preserved where it is readily accessible.

At least, the maker's name and the number and size or capacity of each machine should be kept. It is common to find the operating staff of a plant in doubt as to the make and size of a machine which has been in service a long time. Close estimates of equipment value and productive probabilities are thus rendered all the more difficult. In making up inventories and in plant appraisals, an equipment list, which shows the principal operating and mechanical particulars of each machine, is worth far more than it costs to prepare it. The date of purchase and the cost of the machine should be recorded with the other data when possible, and in places where a separate card or sheet is kept for each piece of apparatus, it is often desirable to record also replacements and possibly repair costs.

Progress in machine design is so rapid in many lines that the factories should be watched closely to reap the full benefits of improvements. Even then, unless specific data of costs, capacity and operating records for each important machine in the plant are available, it is difficult to decide wisely when old machines should be replaced with new and more efficient ones. It is not enough to trust the foreman's memory. While progressive, alert department heads should know approximately the productive limit of each machine in their charge, the most systematic operation of a plant as a whole demands that the best results with each machine, no less than the guaranteed capacity, should be recorded. Foremen come and go, and knowledge of the working power of a machine should remain permanently in the plant.

In connection with the problems of electric driving, the machinery list can be made of great value. The particulars of capacity, method of applying the power, size of gears, belts and pulleys, floor space required, tests of current consumption at different rates of output, load factors, hours of service and the like, constitute time saving data when new plants are to be erected or established ones expanded or remodeled. If these facts are noted when the original installations are made, it is sometimes found that the costs of making tests can be

divided in later work. The ordering of supplies and special parts is greatly facilitated by the use of adequate machinery data. An up to date purchasing agent will have many of the particulars wanted in his files, but the addition of operating records to the original facts, and the preservation of all the items in one place, are justified on every ground constituting the basis of broad economy.

Engineering Competition in the Navy.

The announcement that an engineering competition between the ships of the navy is to be inaugurated suggests possibilities of great usefulness, including increased efficiency in a most important department of our fighting fleets. According to dispatches from Admiral Evans' fleet, the plan is that each ship shall maintain a complete record of speed efficiency and economy; the amount of coal burned; the number of hours run under natural and under forced draft; distance covered and speed obtained, and all other details included in the operation of a ship that come within the province of the engineering staff. The competition will be between vessels of the same class and the award of honor made annually. It will be along the same general lines as the competition in marksmanship, which has assisted materially in raising the standard in the navy. Competitive engineering might easily have a like effect upon the engineering ability of the crews, which, if not of a high order, might be as disastrous in time of war as poor marksmanship, but if superior to that of the enemy, must be of inestimable value strategically.

An incentive to do the best is always an advantage; it is inherent in human nature to respond to the stimulus of competition. Each ship's engineering staff will be keen to improve appliances and equipment and their handling, but what is more important and in itself justifies the competition will be the effect upon the general knowledge necessary in the design of new ships and their equipment. At present certain engineering records must be kept, but doubtless they would be carried into greater detail in securing the data upon which to base the awards of merit and be that much more valuable.

PERSONAL.

Arthur A. Hamerschlag, director of the Carnegie Technical Schools, Pittsburgh, has sailed for Europe. He goes abroad to get in closer touch with the work being done by foreign technical schools.

The Walworth Mfg. Company, Boston, Mass., announces that W. P. F. Ayer, for many years in its employ as traveling salesman, has been elected assistant secretary of the company.

Edward H. Parker has been made superintendent of the New Haven plant of the American Steel & Wire Company, recently purchased from the National Wire Corporation. He will have charge of the management of the plant, the sales of which will be conducted from the company's New York office. Mr. Parker received his first training with the Washburn & Moen Works, at Worcester, Mass., and afterward was transferred to Cleveland to take charge of the American mill of the American Steel & Wire Company. Some two years ago he went to the National Wire Corporation as assistant to Herbert Smith, the manager. It is not the intention to start up the New Haven plant at present, neither is it decided just what its product will be.

J. C. Kurtz has been elected president of the American Aluminum Coating Company, Connellsville, Pa., succeed-

ing Geo. J. Humbert, deceased, and Anna Clara Humbert has been elected secretary and treasurer.

F. V. McMullin, formerly foreman of the forging department of the Westinghouse Machine Company, Pittsburgh, has been made superintendent of the Cleveland City Forge & Iron Company, Cleveland. He is a former secretary of the Engineers' Society of Western Pennsylvania.

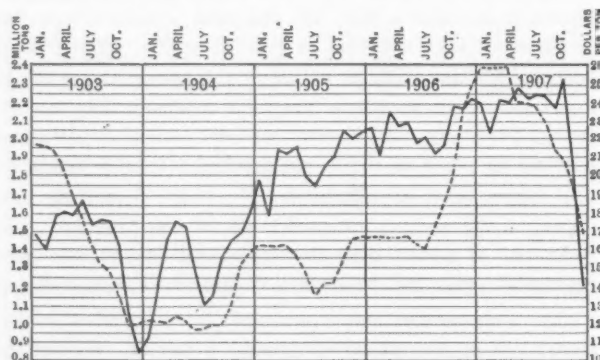
John R. Blakeslee, president of the Ajax Mfg. Company, Cleveland, Ohio, sailed for Europe a few days ago. He expects to spend three or four months in touring through various countries, including Egypt, and in visiting the company's agencies in several European cities.

Wilmer Wickersham, for some years connected with the Pope Tin Plate Company, Pittsburgh, whose mills are at Steubenville, Ohio, has been appointed its general sales agent. He is well and favorably known in the tin plate trade, and his friends will be pleased to hear of his advancement.

Fritz von Hiller has been appointed representative of the Pressed Steel Car Company, at Mexico City, Mexico, to succeed D. G. Farragut, resigned to engage in other business.

The Rate of Producing Iron and Its Prices.

The vicissitudes through which the iron trade passed during the last three months, as well as its advance from the low prices and small rate of production in the latter part of 1903 to the maximum capacity and high prices of 1907, are graphically shown in the accompanying chart. The solid line indicates the production month by month, according to statistics collected by *The Iron Age*, the figures at the left showing the production in millions of tons. In the dotted line is shown the price changes of No. 2 Southern foundry pig iron in Cincinnati, the figures at the right showing the price in dollars per ton. Some minor fluctuations regarding actual output are due to unavoidable causes, as, for instance, in each year except 1904 there is a sharp dip representing production during the month of February, on account of the less number of days in that month. The downward trend of prices always precedes a curtailment of production, as is shown during the entire year 1903 and during the second quarter of 1905, as well as the months following April, 1907. There is a lag in the matter of changes in production, showing that this is not as sensitive a barometer as that of prices. Perhaps it is a mere co-



Price and Production of Pig Iron.

incidence that the line representing prices is usually below the line representing production, and it will be interesting to conjecture when there is another crossing of these lines.

The shipments in December of the German Steel Syndicate show a sharp decline. During that month the shipments of "A products," including billets, track material and shapes, amounted to 359,515 metric tons, as compared with 423,055 tons in November, 1907, and 449,025 tons in December, 1906. These December shipments included 81,706 metric tons of billets and blooms, 58,279 tons of shapes and 219,530 tons of track material. In the corresponding month of 1906 the figures were 142,008 metric tons of billets, 131,873 tons of shapes and 175,144 tons of rails, &c.

Meetings of Testing Society Committees.

The call of the secretary, Prof. Edgar Marburg, for a general meeting of the committees of the American Society for Testing Materials, at Columbia University, January 28, was responded to by representatives of six committees, as follows:

Committee A, on Standard Specifications for Iron and Steel, William R. Webster, chairman.

Committee B, on Standard Specifications for Cast Iron and Finished Castings, Walter Wood, chairman.

Committee K, on Standard Methods of Testing, Gaetano Lanza, chairman.

Committee P, on Fireproofing Materials, Ira H. Woolson, chairman.

Committee S, on Waterproofing Materials, W. A. Aiken, chairman.

Committee T, on Tempering and Testing of Steel Springs and Standard Specifications for Spring Steel, J. A. Kinkead, chairman.

A session of all the committeemen present was held Tuesday morning in Room 302 of the Engineering Building, with Dr. Charles B. Dudley, Altoona, Pa., president of the society, in the chair. The various committees were then assigned to rooms in which their separate sessions were held. The largest representation was that of Committee A on Standard Specifications for Iron and Steel. The principal subject under discussion was specifications for steel rails, the drop test being the particular question considered.

A Scheme for Pig Iron Purchases by Analysis.

The meeting of Committee B on Standard Specifications for Cast Iron and Finished Castings took up the matter of revising the society's specifications for foundry pig iron. In view of the increasing employment of analysis as the basis of pig iron purchases it was thought best to provide specifications from which grading by fracture and the use of numbers to designate various grades of pig iron should be eliminated. The subject was discussed informally after being presented by Chairman Wood and Secretary Moldenke. A scheme was proposed in which the six vowels were made use of, together with the initial letter of the name of each metalloid, to construct a code designating percentages of the various nonferrous constituents of pig iron. Since silicon and sulphur have the same initial letter, C was suggested as the designation for the former. The percentages of the different elements and the corresponding symbol under this scheme are given in the following:

Silicon.		Manganese.	
Symbol.	Per cent.	Symbol.	Per cent.
Ca	0.50	Ma	0.50
Ce	1.00	Me	0.75
Cl	1.50	Ml	1.00
Co	2.00	Mo	1.25
Cu	2.50	Mu	1.50
Cy	3.00	My	1.75 and over.
Allowable variation	0.25	Allowable variation	0.125
Sulphur.		Phosphorus.	
Symbol.	Per cent.	Symbol.	Per cent.
Sa	0.04	Pa	0.25
Se	0.05	Pe	0.50
Sl	0.06	Pl	0.75
So	0.07	Po	1.00
Su	0.08	Pu	1.25
Sy	0.09	Py	1.50 and over.
Percentages are maxima.		Allowable variation	0.125

In the case of silicon, with an allowable variation of 0.25 per cent., Ca would stand for a range in silicon content from 0.25 to 0.75 per cent. In the case of manganese the allowable variation suggested was 0.125, so that Ma would represent a range of 0.375 to 0.625 per cent. Similarly in phosphorus the suggested variation was 0.125 per cent. In the case of sulphur, as determined by the gravimetric method, the percentage specified is the maximum, and any excess of sulphur would result in rejection. It should be noted that there is no connection between the symbols employing the same vowel. Naturally, high silicon would be accompanied by low sulphur, and therefore Sa as the symbol of a sulphur content under 0.04 per cent. has no correspondence to Ca, which represents the lowest silicon content in the schedule.

The above scheme as tentatively developed at the

morning session of the Committee on Cast Iron was discussed on Tuesday afternoon by the sub-Committee on Pig Iron, of which E. S. Cook, Warwick Iron & Steel Company, Pottstown, Pa., is chairman.

Decisions Against Labor Unions.

Two important court decisions affecting trade unions have been given in the past week. At Washington, January 27, the United States Supreme Court declared in effect that any railroad or other common carrier engaged in handling interstate commerce may discharge an employee and assign no reason beyond the fact that he belongs to a labor organization. The case was that of William Adair, plaintiff in error, against the United States. Adair was master mechanic of the Louisville & Nashville Railroad. He discharged William Copping, a locomotive engineer, because he belonged to a union. A prosecution of the foreman was brought under the Erdman act of July 1, 1898, and Adair was fined \$100 in a district court in Kentucky. The tenth section of the Erdman act prohibits all common carriers engaged in interstate commerce from discriminating against members of labor organizations. Justice Harlan gave the decision, from which Justices Holmes and McKenna dissented. The decision expressly says that the tenth section of the Erdman act is unconstitutional, but limits this opinion to that section. The court said:

It was the legal right of the defendant, Adair, however unwise such a course might have been, to discharge Copping because of his being a member of a labor organization, as it was the legal right of Copping, if he saw fit to do so, however unwise such a course on his part might have been, to quit the service in which he was engaged because the defendant employed those who were not members of some labor organization. In all such particulars the employer and the employee have equality of right, and any legislation that disturbs that equality is an arbitrary interference with the liberty of contract which no Government can legally justify in a free land.

The other of the two labor union decisions given in the past week was that of Judge Phillips, in the Cuyahoga County Common Pleas Court, Cleveland, Ohio, holding that the Amalgamated Glass Workers' Union is an organization in restraint of trade and ordering its dissolution, on the ground of public policy. The action was brought by the flatteners and cutters, members of the above union. They complained that the blowers and gatherers, who controlled the union, compelled them to accept wages less than they could secure if independent of the union. The flatteners and cutters insisted that they be allowed to use machinery in their work, but this was forbidden by the union by-laws, under penalty of expulsion. As secession from the union meant deprivation of work the flatteners and cutters attempted to have the by-laws changed, but without success. They then brought suit to dissolve the organization and to restrain it from interfering with the use of machinery.

The Arthur Koppel Company, Machesney Building, Pittsburgh, Pa., is distributing an illustrated pamphlet entitled "The Longest Narrow Gauge Light Railway in the World." This pamphlet describes a railroad of 24-in. gauge, built by Arthur Koppel of London, in German Southwest Africa. It is known as the Otavi Railway, is owned by the Otavi Mines & Railway Company, and extends a distance of 361 miles, running from Swakopmund on the Atlantic Ocean to Tsumeb in the interior. The pamphlet illustrates the construction of the line, showing the substantial character of the track and bridges and special features of the equipment.

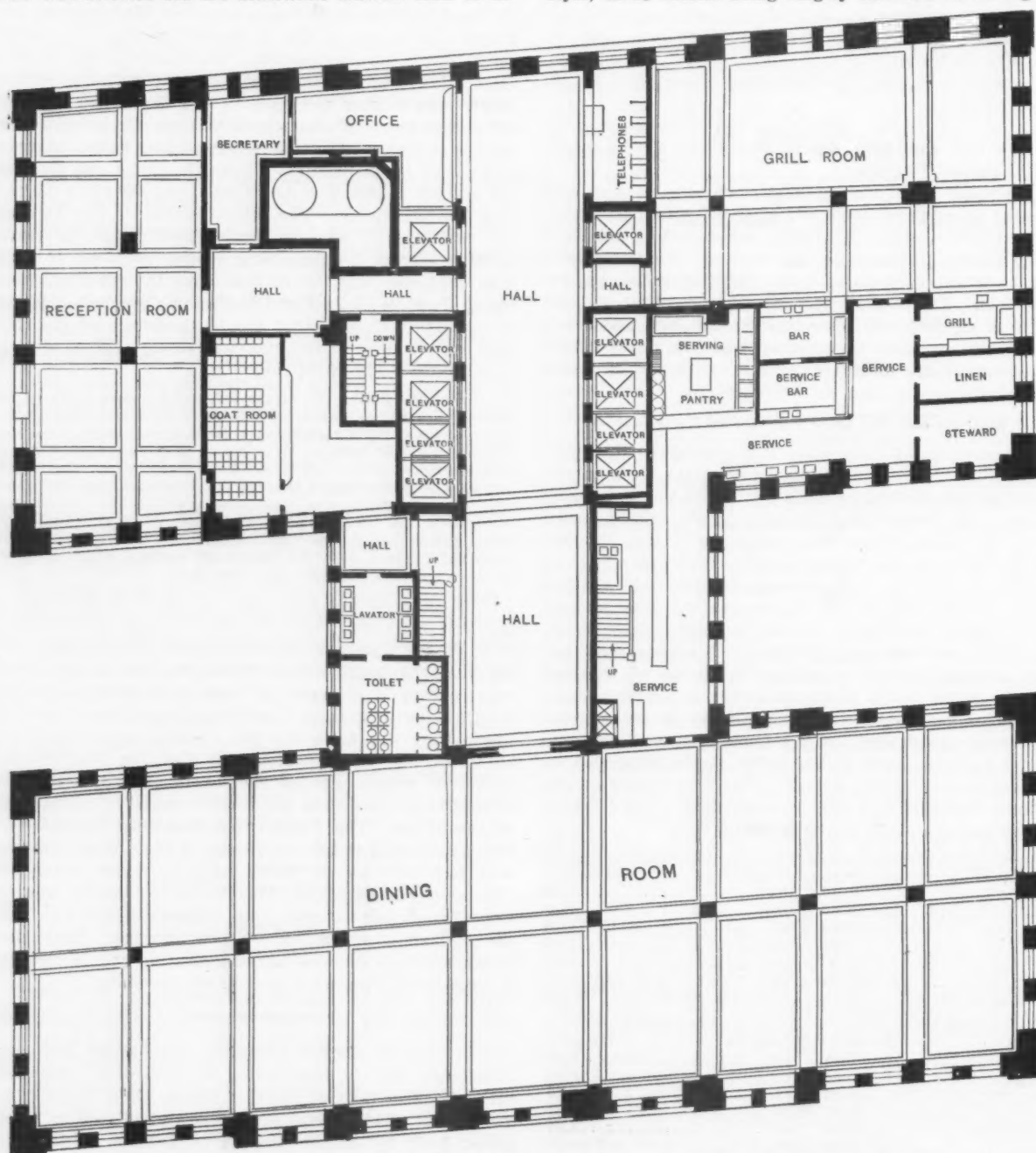
The Westinghouse Electric & Mfg. Company has won an important patent suit in the United States Circuit Court of New York against the Condit Electrical & Mfg. Company of Boston. The patent in question refers to the manufacture of circuit breakers, a very popular electrical appliance, which the Condit Company is alleged to have infringed. The same patent has been upheld in other United States Circuit courts on former occasions.

The Machinery Club.

Expects to Open Its Quarters in May.

The quarters of the Machinery Club of the City of New York, on the twentieth and twenty-first floors of the Fulton Terminal Building, are rapidly nearing completion and the organization has been assured that they will be ready for occupancy on May 1, when the officers expect to open the rooms to the members. The accompanying illustrations show the arrangement of the club's quarters, as designed by Percy Griffin, 225 Fifth avenue, who was selected for the somewhat difficult task of ar-

be furnished with elegance and comfort, while the arrangements will materially differ in effect from those of any downtown dining club, and the furnishings will, it is claimed, be of unusual originality. The main dining room, as can be seen by the accompanying plans, will be located on the twenty-first floor. Its dimensions will be 50 x 150 ft., and it will be furnished in East India mahogany, the style of the furniture being what is known in the furniture trade as the "Thomas Hope" effect, which is early English nineteenth century. It will be a most pleasant room because of the large number of windows. The reception room, which will be 26 x 63 ft., will be furnished in Mexican mahogany of the late Georgian style, these details being largely adhered to throughout



The Machinery Club of New York.—Plan of the Twentieth Floor in the Fulton Terminal Building.

-ranging rooms originally designed for office purposes to suit the requirements of a club. The officers and committees have been working hard since the organization of the movement last April, when F. H. Stillman, who conceived the idea of forming the club, called a general meeting of the trade for that purpose. The Membership Committee has accomplished much in the way of canvassing the trade for desirable members, and it is largely due to its efforts that the organization will have a class of members to be proud of.

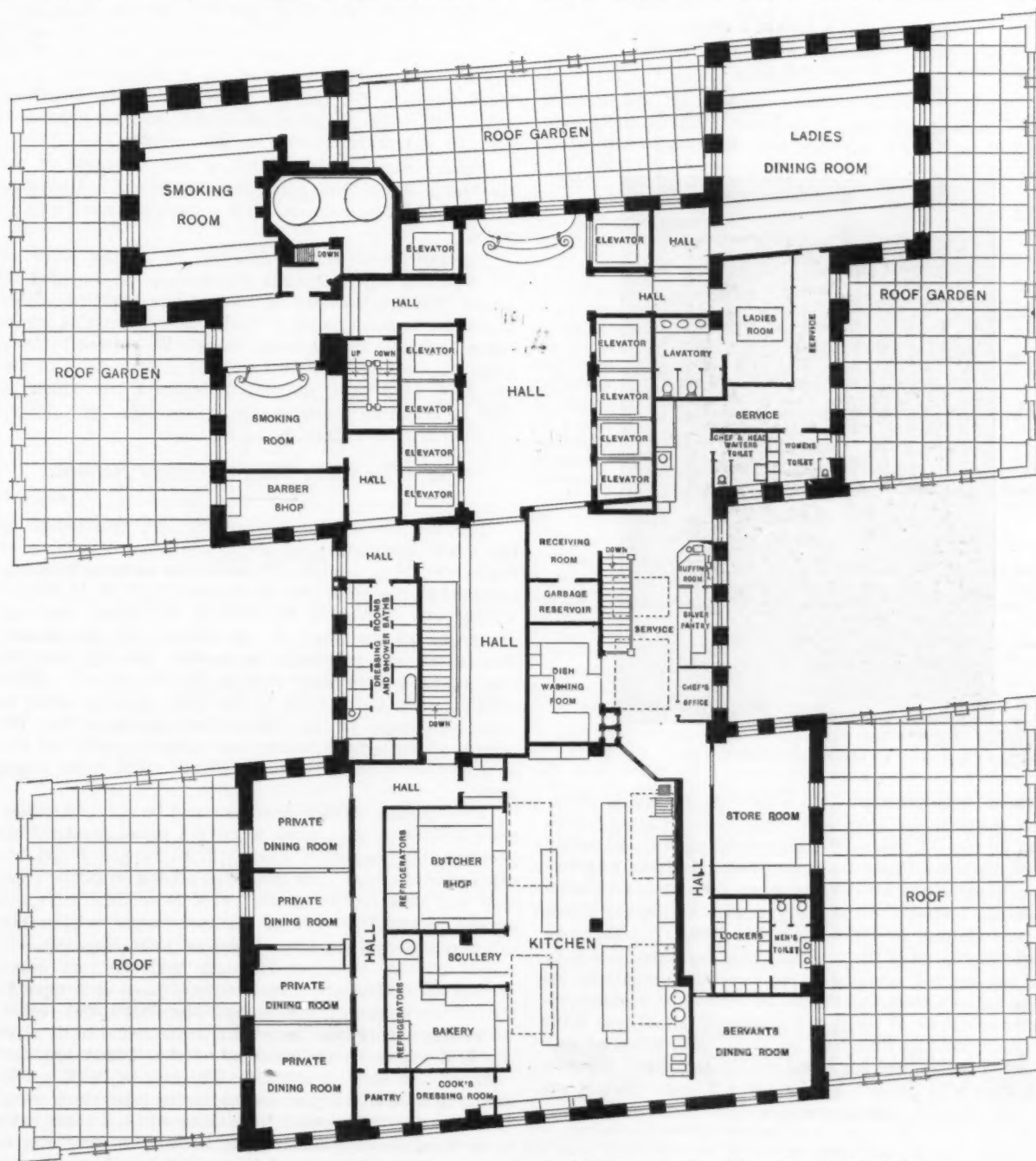
To the House Committee has fallen the task of furnishing the club rooms and supervising and arranging for the purchase of the furniture, linen, silver ware, &c. As a result of the efforts of that committee the club will

the entire room, which will be one of the most luxurious in the club. The covers to be used on the various pieces of the furniture will be of many materials, including tapestry, mohair, damask and heavy leather, the color scheme being carefully balanced so as to produce a most homelike effect.

In the grillroom, which will be 38 x 54 ft., the furnishings will be particularly original, the room being carried out in Flemish renaissance. The wood is to be oak, finished antique cathedral, and the table tops are to be finished in natural wood, oil finish, with a view to using them without covers, as in mediæval times. The hall furnishings on both floors will be in Italian oak. The rear of the top floor will be given up largely to the

kitchen arrangements, as can be seen in the plan, and a series of private dining rooms, the largest of which will be 15 x 16 ft. These rooms are arranged so that they can be converted into one room when necessary, and they will be uniformly furnished in oak of the Jacobean style, covered with medieval tapestry. Facing the Hudson River on the top floor on one side will be the ladies' dining room, retiring room, &c. The dining room will be finished in white, the style of the furniture being Heppelwhite, the coverings being in apple green silk damask. The ladies' retiring room will be sumptuously fitted out with lounges and easy chairs, the furniture being in Louis XVI style, and the color scheme will be in excellent con-

Much credit for the carrying out of the organization plans of the club is due to President Stillman, who in addition to presiding over the meetings of the Board of Governors, has attended every meeting of the House and Membership committees. Both of these committees have met practically every week since the movement was started. Thornton M. Motley of T. N. Motley & Co. has also given a great deal of his time to the movement, he having spent several weeks in Europe last summer arranging for the importation of the china and some special supplies for the club. The officers of the organization are: F. H. Stillman, president; R. C. McKinney, vice-president; Walter L. Pierce, treasurer; Theodore Waters,



The Machinery Club of New York.—Plan of the Twenty-first Floor in the Fulton Terminal Building.

trast to that of the dining room. The smoking room, which will face the river on the opposite side of the building, will be irregular in shape, practically forming two rooms, 16 x 18 ft. and 22 x 29 ft. The furnishing of this room is one of the pet schemes of the House Committee, the predominating colors being brown and blue in rich and harmonious shades, the general effect being eighteenth century Colonial. As can be seen by the plans, the club will be furnished with a barber shop, shower baths, dressing rooms and every modern dining club convenience. One of the summer features will be the roof gardens, which are to be located on the roof section abutting on the top floor in the front section of the building.

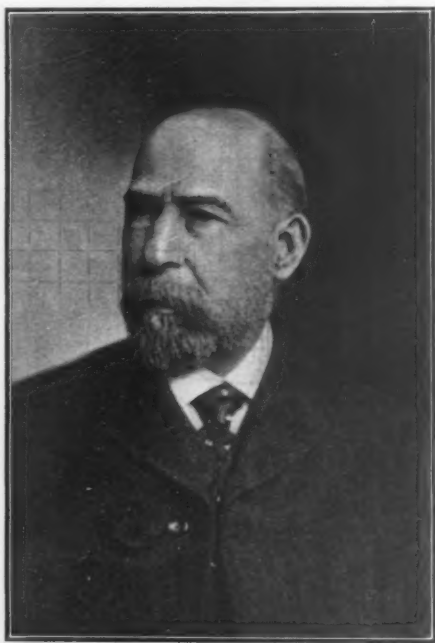
secretary. Board of Governors: O. C. Gayley, second vice-president Pressed Steel Car Company; George A. Post, president Standard Coupler Company; Walter L. Pierce, secretary Lidgerwood Mfg. Company; F. H. Stillman, president Watson-Stillman Company; C. A. Moore, president Manning, Maxwell & Moore; R. C. McKinney, president Niles-Bement-Pond Company; W. P. Pressinger, Chicago Pneumatic Tool Company; T. N. Motley, president T. N. Motley & Co.; Henry Prentiss, president Prentiss Tool & Supply Company; A. B. See, president A. B. See Electric Elevator Company; W. H. Marshall, president American Locomotive Company; E. H. Wells, president Babcock & Wilcox Company; W. L. Saunders, president Ingersoll-Rand Company; Otis H. Cutler, presi-

dent American Brake Shoe & Foundry Company; J. R. Vandyck, president Vandyck-Churchill Company; Kenyon B. Conger, secretary Hudson Companies; William B. Albright, Sherwin-Williams Company; Charles A. Schieren, Jr., Charles A. Schieren & Co. Executive Committee: F. H. Stillman, chairman; Walter L. Pierce, George A. Post, Henry Prentiss. House Committee: Thornton N. Motley, chairman; Charles A. Schieren, Jr.; Percy A. Ware, *The Iron Age*; George Howells, Ingersoll-Rand Company; Edward H. Benners, Crown Casting Company. Membership Committee: J. R. Vandyck, chairman; George L. Gillon, Bridgeport Motor Company; Charles B. Crook, Lidgerwood Mfg. Company.

OBITUARY.

WILLIAM GILLIES.

William Gillies, consulting engineer of the Illinois Steel Company, Chicago, died January 20, as the result of a fall on the icy sidewalk near his home. He never



WILLIAM GILLIES.

regained consciousness. He was born in Beith, Ayer-shire, Scotland, in 1839, and came to the United States when he was 12 years old. He served his apprenticeship in the Michigan Central shops at Detroit, Mich., and was a machinist there until 1876, when he went to Chicago to become foreman of the machine shop of the old North Chicago Rolling Mill Company. In 1880 he was made master mechanic of the works of that company, which in 1889 was merged with the Union and Joliet companies into the Illinois Steel Company. In 1882 he was appointed master mechanic of the South Works of the Illinois Steel Company, holding that position until 1898, when he was promoted to the position of consulting engineer. He was well known by master mechanics and mill officials all over the country. He leaves a widow, three sons and a daughter.

ARNOLD C. SAUNDERS of the firm of M. A. Hanna & Co., Cleveland, Ohio, from 1885 to 1893, and since the latter year at the head of A. C. Saunders & Co., a Cleveland coal and vessel firm, died January 22, aged 55 years. He was president of the Lorain Coal & Dock Company and vice-president of the Johnson Coal & Mining Company. For some years his firm was engaged in the Lake Superior ore trade.

THOMAS REED PICKARD, head of the foundry department of the Brass Foundry & Machine Company, Fort Wayne, Ind., and for 50 years connected with this company, died January 12, aged 79 years. He was born in Cornwall, England, and coming to this country in 1848 served his apprenticeship as molder with C. & J. Cooper

& Co., Mt. Vernon, Ohio. Beginning service in 1854 with the Bass Foundry & Machine Company, then known as Cooper, Bass & Co., he was four years later advanced to the position of superintendent, which he occupied in an active capacity for 44 years. For the past few years he retained his connection with the company as consulting superintendent. He leaves four sons.

HENRY L. W. HYDE of Pittsburgh died January 23, after a long illness, at Pinehurst, N. C., whither he had gone in the hope of regaining his health. He was born in England, where his father, Charles Hyde, is a prominent foundryman and brass manufacturer. He went to Pittsburgh a number of years ago and engaged in the steel and iron business. At the time of his death he was associated with his brother, Charles Hyde, and others in the Clearfield Steel & Iron Company, operating a rolling mill at Hyde, near Clearfield, Pa. Mr. Hyde was also one of the owners of the Whitney power plant at Whitney, N. C. He was a member of the Duquesne and Union clubs. He was unmarried, and his brother is his only surviving relative in this country.

PERLEY S. KENNARD, secretary and treasurer of the Cleveland Steel Tool Company, Cleveland, Ohio, died January 23, of pneumonia, after a week's illness, aged 55 years.

EDWARD BUXTON died January 26 at the home of his son, Dr. G. E. Buxton, Providence, R. I., aged 82 years. He was founder in 1850 of the business of the E. Buxton & Son Company, dealer in old material, whose general office is in Worcester, Mass. He retired in 1886, when his son, A. L. D. Buxton, the present head of the company, took over the entire business, to which in 1900 he admitted his four sons.

The Wisconsin Mining Trade School.

The Wisconsin Mining Trade School, established by the State Legislature of 1907, will open its doors at Platteville, Wis., January 27, using the building formerly occupied by the State Normal School. Prof. E. M. Brunswarde, who will be at the head of the school, has had charge of all the work of preparation and installation. The school year will begin in January in order that the two years' course may include two summers. While offering every inducement to the older working miner to take advantage of its educational opportunities, the officers of the school realize that a great institution can only be developed by having a course suitable for young men.

Two months of each summer must be spent in underground labor, and in order to have a broad practical experience, one summer's work will be in metal and the other in coal mines. For the metal mining work the great zinc and lead region of southwest Wisconsin, that lies around Platteville, will be utilized, while within 300 miles radius are the iron ranges of Lake Superior, the copper country of upper Michigan and the lead mines of southeast Missouri. Platteville is also very near to the northern edge of the central bituminous coal region. No mining theory will be taught the students until after the first summer's underground work. Plans are now underway to start a shaft in the campus itself. Considerable time will be devoted to mining laboratory work. The time devoted to work in drilling will not limit itself to teaching manual dexterity in boring, but will aim to give a practical grasp of the principles that underlie efficient hand or machine work.

Andrew M. Fairlie, secretary of the American Brass Founders' Association, which was formed at the Philadelphia meeting of the American Foundrymen's Association in 1907, reports that the membership, which was 50 in July, had increased to 111 in December. It comprises not only brass founders, but also manufacturers of metallic goods, metal producers, aluminum workers, supply men and platers and polishers. The platers and polishers within a year or two may become sufficiently numerous as members of the association to form a separate organization.

Proposed Pig Iron Contract.

The Contract Committee of the Iron Buyers' Association recently formed in the central territory, held a meeting January 22 at the Business Men's Club, Cincinnati, to submit the proposed contract for use of its members in dealing with the furnaces. Members of the Executive Committee of the association were invited and also the representatives of the furnaces. The contract as presented hereunder was discussed in all its phases, each clause being discussed separately:

PIG IRON CONTRACT. Issued from the Offices of

..... Date,

SELLER'S NO.
BUYER'S NO.
SOLD TO.....
QUANTITY.....
GRADE.....

* (A) By fracture No.
When pig iron is bought by fracture, the furnace to furnish its analysis of same.

(B) By analysis:
Silicon.
Sulphur.
Manganese.
Phosphorus.
Graph. Carbon.
Combined Carbon.

Analysis of each carload or cast to accompany bill of lading or invoice.

PRICE.... \$.....per ton (2240 lb.)

F.o.b. Cars.

The price is based on the present tariff freight rate of.....per ton from.....to..... In case the rate declines buyer to have the benefit; in case the rate advances, buyer to pay the advance.

In case of disputed weight, the buyer to have the privilege of having the iron reweighed by the carrier or public weigher at the nearest practical point, said weight to be final.

PAYMENT.... †Freight cash. Balance, cash 30 days from date of notice by the carrier of arrival of shipment at destination.

‡One per cent. cash discount if paid 10 days from invoice date.

If this lot is divided in delivery, settlement shall be made for each lot as though a separate sale.

Failure to make payment when due shall forfeit buyer's right to further deliveries.

—Failure to make deliveries as per contract shall forfeit seller's right to hold buyer to this contract, and the buyer shall have the right to purchase this grade of iron in the open market and charge any excess over contract price to the seller, during the interruption of deliveries.

SHIPMENT.....

ACCEPTED..... ACCEPTED.....
(Buyer) (Seller)

* If on record at furnace, or if possible.
‡ These (carbons) to be eliminated in the revised form.
† Settlement of invoice on 15th of each month for previous month's shipment of iron from furnace, provided iron has been received.
‡ One-half of one per cent. (½ %) discount if paid ten days from date of bill.
— Buyer and seller to have the same right in matter of sale and purchase in open market.

The provisions indicated were mutually agreed upon as best carrying out the purposes of an equitable contract to seller and buyer alike, and a motion put before those present to recommend the approval of the proposed contract, both to the members of the association and to the different furnaces interested, was duly carried. The secretary, William Gugenheim, of the Foos Mfg. Company, Springfield, Ohio, was instructed to have a supply of the revised contracts printed, and send to both the furnaces and the association members; after which it is expected the new form will be generally used in deals between manufacturer and consumer of iron. With the changes indicated the form is expected to be acceptable to furnaces. These changes are indicated in the form and elaborated in the marginal notes.

The meeting was attended by the following members of the Iron Buyers' Association: William Fetzter, president, Fetzter & Co., Middletown, Ohio; Theodore Bollman, Bollman & Wilson Foundry Company, Cincinnati; G. H. Gorman, Davis Sewing Machine Company, Springfield, Ohio; George M. Verity, American Rolling Mills Company, Middletown, Ohio; L. Kahn, Estate Stove Com-

pany, Hamilton, Ohio; and the members of the Contract Committee: S. M. Blackburn, chairman, John B. Morris Foundry Company, Cincinnati; C. L. Bauer, Foos Mfg. Company, Springfield, Ohio; P. E. Montanus, Springfield Machine Tool Company, Springfield, Ohio; H. R. Viot, Barney & Smith Car Mfg. Company, Dayton, Ohio. Representatives of practically all the Southern furnaces, as well as Northern, were present, and participated in the discussion.

NEWS OF THE WORKS.

Iron and Steel.

Jefferson Furnace of the Jefferson Furnace Company, at Oak Hill, Ohio, has gone out of blast.

The No. 2 furnace of Joseph E. Thropp at Saxton, Pa., was banked January 23 and will remain idle until a considerable reduction is made in the stock of pig iron on hand.

The McInnes Steel Company, Corry, Pa., has just installed a new portable 100-hp. boiler and a new Esplan Lucas crank sawing machine.

The charcoal furnace of the Shelby Iron & Coal Company, at Shelby, Ala., was blown out during the week.

Work is being rushed on the new stack of the Birmingham Coal & Iron Company at Vanderbilt, Ala., which will no doubt be finished by April 1.

General Machinery.

The Houston Armature Works, Houston, Texas, has been incorporated with a capital of \$10,000, to manufacture meters, dynamos and electrical appliances. The plant now occupied by the company is of a temporary nature, the purpose being to erect a suitable factory building as soon as arrangements to that end are perfected.

The Titusville Forge Company, Titusville, Pa., has installed oil burning furnaces in its forging department and has also replaced its large annealing furnace with an oil furnace. It is claimed that oil furnaces have proved exceptionally good for annealing purposes, as a more uniform temperature can be maintained. The company is also installing improved machinery in its machine shop.

Power Plant Equipment.

The gas engine department of the S. M. Jones Company, Toledo, Ohio, has been taken over by the Rathbun-Jones Engineering Company, Toledo, which has been incorporated with a capital stock of \$240,000. In connection with the manufacture of the Rathbun vertical gas engines, which are made in sizes 25 to 600 hp., the company will carry on a general engineering business of power plants. The company is officered as follows: H. W. Ashley, president; G. J. Rathbun, vice-president; Paul P. Prudden, secretary.

The directors of the Vincennes Traction & Light Company, Vincennes, Ind., have authorized an issue of \$100,000 in 6 per cent. preferred stock. Among the improvements contemplated are the enlargement of the power house and extension of service to a new factory district.

A 100-hp. boiler is required by the Merchants' & Miners' Transportation Company, Baltimore, Md., for its new building, 50 x 83 ft. The principal part of this building will be used for warehouse purposes and no other equipment will be purchased at present.

Foundries.

The automatic Vending Machine Company, Indianapolis, Ind., manufacturer of automatic vending machines, is in the market for light gray iron and brass castings, small stamped goods, small iron rivets, tempered steel springs, enameling, plating, &c.

Bridges and Buildings.

Recent contracts secured by the Penn Bridge Company, Beaver Falls, Pa., include the structural steel for a foundry building, 100 x 300 ft., for the National Transit Company, Oil City, Pa., about 200 tons, also the steel work covering extensive repairs and for the straightening of a bridge for the Florida East Coast Railroad at Jacksonville, Fla. The company is now shipping the structural material for a steel pier for the Santiago Navy Yard, Santiago, Cuba.

The Central States Bridge Company, Indianapolis, Ind., has secured the contract for a bridge over the Pennsylvania Railroad near Warsaw for the Winona Interurban Railway Company, with headquarters at Warsaw, Ind. The bridge will cost \$26,000.

Fires.

The plant of the Cleveland Steel Casting Company, Cleveland, Ohio, was burned January 21, the loss being about \$50,000.

The two-story brick building on Rodney street, Brooklyn, N. Y., occupied by the International Cork Company and the Brooklyn Bottle Stopper Company, was destroyed by fire January 23, with a loss of about \$50,000.

The foundry of the Hamacek Iron Works, Kewaunee, Wis., was recently destroyed by fire. The loss is placed at \$15,000.

The building in Norwich, Conn., occupied by the Norwich Belt Mfg. Company and the Davenport Arms Company, was burned January 27, the loss being about \$25,000.

Hardware.

After being closed for a month, during which time some repairs were made, the H. M. Myers plant of the Ames Tool & Shovel Company at Beaver Falls, Pa., has again been put in operation to practically full capacity in all departments.

The annual meeting of the Ideal Fence Company, Adrian, Mich., was held January 13 and officers for the ensuing year were elected, as follows: O. L. Teachout, president; J. V. B. Palmer, vice-president; E. A. Baker, secretary and treasurer; Geo. H. Cook, manager.

At the semiannual meeting of its directors, held January 13, the Moline Plow Company, Moline, Ill., declared its usual dividend. Official denial was given to a rumor that the plant was to be sold. It is now in operation on an eight-hour basis.

With a view to providing means for the expansion of its business, the stockholders of the Smith Improved Lock Nut Company, Inc., Rockford, Ill., will at a meeting to be held early in February consider the question of increasing the capital stock from \$60,000 to \$100,000. During the past year the company, which manufactures rolled and cut thread track bolts in addition to the Smith improved lock nut, has added a complete bolt department to its plant, and the present and prospective demand for these products seems to warrant a liberal extension in capital to make possible the carrying on of the business on a larger scale.

Kraeuter & Co., Newark, N. J., have just completed a large addition to their drop forging plant, and state that they are now in a position to solicit orders for special drop forgings, no matter how intricate they may be.

The Schatt & Morgan Cutlery Company, Titusville, Pa., has taken possession of the new buildings lately erected, the capacity of the enlarged plant being 2000 dozen pocket knives per week. The company is now employing a larger force than ever before.

The Kanneberg Roofing & Ceiling Company, Canton, Ohio, is now comfortably installed in its new plant, consisting mainly of a large two-story brick building, 50 x 400 ft., of fireproof construction, and equipped with new and up to date machinery. A railroad switch runs the entire length of the factory. The plant also includes a two-story building 40 x 60 ft., in which the company has used its artistic metal ceilings and side walls throughout, covering the building with its own metal shingles for roofing and using its own galvanized rock faced brick for siding. Opportunity has thus been taken to show the company's metal ceilings and side walls as they appear in actual use, as well as its metal shingles and brick siding.

During 1907 the Buchanan Foundry Company, Lebanon, Pa., doubled the size of its foundry building and installed a new power plant, both steam and electricity, and a new core shop with the latest equipment. The railroad siding used by the company is elevated on trestle work. All metal and fuel for cupola is unloaded directly on the charging platform, which is about 40 ft. square. The boiler fuel, sand, brick and other necessary foundry supplies are unloaded in bins underneath and alongside of the railroad track, thus securing material economy in handling raw material. The company's products include sash weights, building plates, templates, cast iron washers, elevator balance weights, and medium and low grade castings.

Miscellaneous.

We are advised that the report that large additions would be made to the new plant of the American Can Company at New Castle, Pa., are untrue. As yet this new plant has not been started, but will probably be put in operation at an early date. There is now being installed at the plant a complete system of sprinkler service, the work being done by the General Fire Extinguisher Company, Warren, Ohio, and a steam heating plant is also being installed by the James M. Merritt Company, New York. It is possible that the American Can Company may put up additional buildings at this plant some time during this year, but this has not been definitely decided.

The Cleveland Cliffs Iron Company, Cleveland, Ohio, contemplates sinking two shafts at its mines, each 14 ft. 10 in. by 10 ft. 10 in. inside dimensions, the shafts to be sunk through sand and gravel. In one shaft it is 104 ft. to the ledge and in the other 107 ft. Concrete shaftings are to be considered. Any company desiring to submit bids to construct these shafts, either by concrete or any other way, should communicate with the company at Ishpeming, Mich.

The Foster Stove Company, Ironton, Ohio, has elected the following officials: H. A. Marting, president; A. C. Lowry, vice-president; W. H. Foster, secretary and treasurer. These officials with E. O. Marting, J. C. Marting, C. H. Hutsinpillar, O. P. Doty and E. E. Horschel comprise the Board of Directors. The plant of the company is idle at present.

George H. Nichol has been appointed receiver for the Anderson Bridge & Scraper Company, Anderson, Ind. The stockholders are the petitioners, the object being to close up the company's affairs that it may go out of business. The assets are double the liabilities.

The R. J. Schwab & Sons Company, Milwaukee, Wis., manufacturers of Gilt Edge house heating furnaces and cement block machinery, plans to move into its new plant in the near future. The building is of reinforced concrete construction, five stories in height, and situated on Clinton street, between South Pierce and Park streets.

The Pittsburgh Automatic Vise & Tool Company, Pittsburgh, supplied the entire vise equipment for the new machine shops of the United Verde Mining Company at Jerome, Ariz.

The Insley Iron Works, Indianapolis, Ind., has issued \$15,000 of preferred stock, thus increasing its capital stock to \$40,000.

The Ingram-Richardson Mfg. Company, Beaver Falls, Pa., which makes a specialty of porcelain enameled iron signs, enameled reflectors and refrigerator lining, has completed some extensions to its plant, consisting of two brick buildings, one 60 x 120 ft. and the other 40 x 140 ft., the former being equipped with new furnaces and the latter with mixing and melting apparatus, both of which are now being utilized. These additions give the company an increased capacity of about 50 per cent. in its products.

The Ann Arbor Machine Company, Ann Arbor, Mich., maker of hay presses, at its annual meeting, held January 14, increased the capital stock from \$50,000 to \$100,000. This action was taken to provide capital adequate for the growing business. The officers of the company are T. S. Langford, president; W. P. Moore, secretary and manager; H. J. Hanson, superintendent.

The General Fireproofing Company, Youngstown, Ohio, has secured a large contract for fireproofing for a court house at San Raphael, Cal. The company recently filled a contract amounting to \$70,000 for storage shelving and document filing cases for the new Bowling Green custom house in New York; another of \$58,000 for equipment for the offices of the Larkin Soap Company in Buffalo, N. Y.; one for cases, steel files and omnibuses for the Chemical National Bank of New York and a fourth for the United States Government. It will be remembered that Congress a few months ago passed a resolution to take out the wood shelving in the library of the clerk of the Senate and put in 8000 shelves of steel. The General Fireproofing Company was awarded the contract for this shelving.

B. N. Rothenberger, Frederick Schoff and D. F. Hershey of Lancaster, and E. L. Garver and M. B. Leeman of Litz, Pa., have purchased the Yeager-Hunter Stove Works, Royersford, Pa., and will operate the plant under the same name. The plant is equipped with new patterns and has been successfully operated for 25 years. C. G. Yeager, former president of the company, will retire from business. The new officers are: President, E. L. Garver; vice-president, Frederick Schoff; secretary and treasurer, M. B. Leeman.

British Shipbuilding in 1907.—The new shipping turned out at British yards in 1907 amounted to 1,814,722 tons, which compares with 2,002,571 tons in 1906. The total for last year included 37,200 tons of naval vessels, as against 47,100 tons in 1906. The English yards contributed 1,100,246 tons in 1907, the Scotch yards 674,934 tons and the Irish yards 138,542 tons. The English yards showed a decline of 192,000 tons and the Irish yards 11,000 tons, while the Scottish shipbuilders increased their total by 16,000 tons over 1906. The launchings in 1907 numbered 1825 as against 1421 in 1906. The Clyde made a new record, with an output of 619,919 tons last year, as against 598,841 tons in 1906. The Tyne was second, with 336,922 tons last year, a decline of 74,647 tons.

The Nova Scotia Steel & Coal Company produced about 59,000 tons of pig iron in 1907, an increase of 10,000 tons over the previous year. Its steel production was about 71,000 tons, an increase of 20,000 tons. The company has been pushing the development of its submarine iron ore deposits at Bell Island, Newfoundland, adjoining those of the Dominion Iron & Steel Company, and is tunneling under the latter company's holdings which are nearest the island. Estimates of the iron ore contained in the deposits of both companies run as high as 500,000,000 tons.

The Bettendorf Axle Company, Davenport, Iowa, has completed its new machine and blacksmith shop, which has been in course of erection for some months. The company gave a house warming on January 18, which was participated in by upward of 1000 of the employees and members of their families. The new building is 50 x 380 ft., is of steel and brick construction, and has all the modern accessories and conveniences.

Greatest Steel Corporation Earnings.

Total for 1907 Was \$160,984,477.

Notwithstanding the heavy reduction in its earnings in the months of November and December, the statement of the United States Steel Corporation for the quarter ending December 31, 1907, shows that the year just completed was the greatest in its history. The total net earnings for the year were \$160,984,477, against \$156,624,273 in 1906, which had broken all records. The October earnings were the greatest for any one month up to that time.

The quarterly statement of net earnings given below compares the last quarter of 1907 with the last quarter of 1906. The earnings for December, 1907, may be slightly changed on completion of the audit of accounts for the year:

	1907.	1906.
October, net earnings.....	\$17,052,211	\$14,984,926
November, net earnings.....	10,467,253	13,482,464
December, net earnings.....	5,034,531	13,277,574
Total after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, employees' bonus funds, and interest on bonds and fixed charges of the subsidiary companies.....	\$32,553,995	\$41,744,964
Less charges and appropriations for the following:		
Sinking funds on bonds of subsidiary companies....	\$494,523	522,525
Depreciation and reserve funds (regular provisions).....	5,683,275	5,523,849
Special improvement and replacement funds.....	500,000	1,000,000
	6,677,798	\$7,046,374
Net earnings.....	\$25,876,197	\$34,698,590
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding.....	\$5,879,231	\$5,688,497
Sinking funds for the quarter on U. S. Steel Corporation bonds—viz.:		
Installments	\$1,012,500	\$1,012,500
Interest on bonds in sinking funds.....	295,231	235,965
	7,186,962	\$6,936,962
Balance.....	\$18,689,235	\$27,761,628
Less charged off for adjustments in sundry accounts.....	483,529	90,651
	\$18,205,706	\$27,670,977
Dividend for the quarter on preferred stock, 1½ per ct.....	\$6,304,919	\$6,304,919
Dividend for the quarter on common stock, ½ per ct....	2,541,513	2,541,513
	8,846,432	\$8,846,432
Surplus for the quarter.....	\$9,359,274	\$18,824,545
Less appropriated from surplus on account of expenditures made and to be made on authorized appropriations for additional property, new plants, construction and discharge of capital obligations.....	6,000,000	15,500,000
Balance of surplus for the quarter	\$3,359,274	\$3,324,545

Reservations for New Construction.

The total of the amounts set aside out of the quarterly earnings in 1907 for additional property and for new construction is \$54,000,000, as against \$50,000,000 in 1906. By quarters in the past year these amounts were \$14,500,000, \$18,500,000, \$15,000,000 and \$6,000,000. Of the \$50,000,000 reserved for new property and new work in 1906, \$21,500,000 was for the new plant at Gary, Ind. At the end of the second quarter of 1907 enough had been voted to Gary to make a total of \$45,000,000 for that object. As \$10,000,000 had been set aside for Gary in 1905 and \$21,500,000 in 1906, the total for the first half of 1907 was \$13,500,000. No definite statement has been made of the Gary proportion of the \$21,000,000 reserved for new construction in the last two quarters of last year.

Net Earnings and Surplus.

The annual report of the corporation for 1906 showed a surplus on December 31 of that year of \$97,720,714. The statements of the past year have shown the following

amounts carried to surplus in the respective quarters: \$3,684,576, \$3,497,080, \$4,911,711 and \$3,359,274—total, \$15,452,641. While some adjustments are made in the final audit of accounts for the year, which may change this slightly, it would appear that the surplus is now above \$110,000,000.

The net earnings for the year 1907, \$160,984,477, compare with \$156,624,273 in 1906, \$119,787,658 in 1905 and \$73,176,522 in 1904. The net earnings for the past four years, compared monthly and quarterly, were as follows:

	1907.	1906.	1905.	1904.
January ...	\$12,838,703	\$11,856,375	\$6,810,847	\$2,868,213
February ..	12,145,815	10,958,275	6,629,463	4,540,673
March	14,137,974	13,819,840	9,585,586	6,036,346
1st qtr....	\$39,122,492	\$36,634,490	\$23,025,896	\$13,445,232
April	\$14,600,838	\$12,581,902	\$9,037,925	\$6,863,833
May	16,056,832	14,041,601	10,602,187	6,256,518
June	14,846,035	13,501,530	10,665,004	6,370,374
2d qtr....	\$45,503,705	\$40,125,033	\$30,305,116	\$19,490,725
July	\$13,804,167	\$12,242,098	\$9,035,168	\$6,344,771
August	15,279,173	13,158,860	10,986,901	6,202,957
September .	14,720,945	12,713,666	11,218,513	6,226,204
3d qtr....	\$43,804,285	\$38,114,624	\$31,240,582	\$18,773,932
October ...	\$17,052,211	\$14,984,926	\$12,400,306	\$7,250,204
November ..	10,467,253	13,482,464	11,827,215	7,117,418
December ...	5,034,531	13,277,574	10,988,543	7,009,011
4th qtr....	\$32,553,995	\$41,744,964	\$35,216,064	\$21,466,633

The statement of unfilled orders on hand at the close of 1907 compares as follows with previous quarters:

	Tons.		Tons.
December 31, 1907....	4,624,553	December 31, 1904....	4,696,203
September 30, 1907....	6,425,008	September 30, 1904....	3,027,436
June 30, 1907.....	7,603,878	June 30, 1904.....	3,192,277
March 31, 1907.....	8,043,858	March 31, 1904.....	4,136,961
December 31, 1906....	8,489,718	December 31, 1903....	3,215,123
September 30, 1906....	7,936,884	September 30, 1903....	3,278,742
June 30, 1906.....	6,809,589	June 30, 1903.....	4,666,578
March 31, 1906.....	7,018,712	March 31, 1903.....	5,410,719
December 31, 1905....	7,605,086	December 31, 1902....	5,347,523
September 30, 1905....	3,865,377	September 30, 1902....	4,843,007
June 30, 1905.....	4,829,655	June 30, 1902.....	4,791,993
March 31, 1905.....	5,597,560		

J. B. Hogg, civil and mining engineer, Connellsville, Pa., has issued a map revised to January, 1908, of the Connellsville coke region and adjacent fields, showing all coke works in southwestern Pennsylvania. This map plots the various railroad lines, and gives the names of the owners of coke ovens on each railroad and its branches. It is so complete that it even includes the coke ovens abandoned by reason of the coal having been worked out. This map will be found of great value by all who are interested in receiving shipments of coke from the Connellsville region.

Charles J. Grist, London, England, has patented a method of hardening steel or steel alloys. In the heating of steel there are certain points or critical periods when the rise of temperature is arrested. By the new process the steel to be treated is heated in a vessel containing mercury to a critical point, which varies for different steels, but is from 200 to 450 degrees C., and then an electric current is applied at about 200 to 500 volts and about 25 amperes. Carbon steel twist drills treated in this manner, it is stated, perform nearly double the amount of work done by untreated drills.

With the opening of spring the Jones & Laughlin Steel Company, Pittsburgh, will launch a new steel towboat for bringing coal from the company's mines in the upper pools of the Monongahela River to its mills and coke works in Pittsburgh. The boat will be of unusual power. It will also be one of the few all-steel boats on the upper rivers, and is intended for the hardest service.

The Charles A. Schieren Company, New York, has been incorporated, with an authorized capital of \$1,000,000, under a New York charter, to take over the partnership of the well-known leather belting firm of that name. The directors of the new corporation are Charles A. Schieren, F. A. M. Burrell, Charles A. Schieren, Jr., Arthur Schieren and Harry Victor Schieren.

Pig Iron Production in 1907.

James M. Swank, general manager of the American Iron and Steel Association, has just published the statistics of pig iron production in the United States in 1907. The total was 25,781,361 gross tons, or somewhat in excess of preliminary estimates, which were based on a less output of charcoal iron in the second half than in the first half, corresponding to the decrease in coke iron production. Charcoal furnaces, however, produced more iron in the second half than in the first half. The following table gives the half yearly production for the past four years in gross tons:

	1904.	1905.	1906.	1907.
First half....	8,173,438	11,163,175	12,582,250	13,478,044
Second half....	8,323,595	11,829,205	12,724,941	12,303,317

Totals 16,497,033 22,992,380 25,307,191 25,781,361

The production in the first half of 1907 was much the largest for any six months in our history, and promises to stand as a record for some time. The output by States last year was as follows:

Total Production of Pig Iron by States.

States.	Production.—Gross tons of 2240 lb. (Includes spiegeleisen and ferromanganese.)	First half of 1907.	Second half of 1907.	Total for 1907.
Massachusetts, Connecticut.....	8,746	10,373	19,119	
New York.....	859,125	800,627	1,659,752	
New Jersey.....	195,245	177,944	373,189	
Pennsylvania.....	5,964,884	5,383,665	11,348,549	
Maryland.....	221,145	190,688	411,833	
Virginia.....	260,912	217,859	478,771	
Georgia, Texas.....	26,173	29,652	55,825	
Alabama.....	861,771	824,903	1,686,674	
West Virginia.....	151,643	139,423	291,066	
Kentucky.....	79,013	48,933	127,946	
Tennessee.....	193,371	199,735	393,106	
Ohio.....	2,815,174	2,435,513	5,250,687	
Illinois.....	1,263,258	1,194,510	2,457,768	
Indiana, Michigan.....	197,330	239,177	436,507	
Wisconsin, Minnesota.....	160,045	162,038	322,083	
Missouri, Colorado, Oregon, Washington, California.....	220,209	248,277	468,486	
Totals.....	13,478,044	12,303,317	25,781,361	

The production of coke and anthracite pig iron by States was as follows, 145 such furnaces being reported in blast December 31, 1907:

Production of Coke and Anthracite Pig Iron.

States.	First half of 1907.	Second half of 1907.	Total for 1907.
New York.....	859,125	800,627	1,659,752
New Jersey.....	195,245	177,944	373,189
Pennsylvania.....	5,964,264	5,381,996	11,346,260
Maryland.....	221,145	190,688	411,833
Virginia.....	260,912	217,859	478,771
Georgia.....	26,173	29,652	55,825
Texas.....	26,173	29,652	55,825
Alabama.....	846,034	805,499	1,651,533
West Virginia.....	151,643	139,423	291,066
Kentucky.....	78,423	47,561	125,984
Tennessee.....	193,016	197,590	390,606
Ohio.....	2,815,174	2,433,088	5,248,262
Illinois.....	1,263,258	1,194,510	2,457,768
Indiana.....	158,290	199,969	358,268
Michigan.....	158,290	199,969	358,268
Wisconsin.....	158,290	199,969	358,268
Minnesota.....	158,290	199,969	358,268
Missouri.....	245,530	266,818	512,348
Colorado.....	245,530	266,818	512,348
Totals.....	13,272,248	12,071,716	25,343,964

The production of charcoal iron by States is shown in the following table. On December 31 the number of active charcoal furnaces was 22, against 25 on June 30:

Production of Charcoal Pig Iron by States.

States.	First half of 1907.	Second half of 1907.	Total for 1907.
Massachusetts.....	8,746	10,373	19,119
Connecticut.....	8,746	10,373	19,119
New York.....	620	1,669	2,289
Pennsylvania.....	517	927	1,444
Maryland.....	517	927	1,444
Virginia.....	15,737	19,404	35,141
Alabama.....	15,737	19,404	35,141
Georgia.....	15,737	19,404	35,141
Texas.....	15,737	19,404	35,141
Kentucky.....	6,421	14,098	20,519
Tennessee.....	6,421	14,098	20,519
Ohio.....	0	2,425	2,425
Michigan.....	143,860	151,062	294,922
Wisconsin.....	143,860	151,062	294,922
Minnesota.....	143,860	151,062	294,922
Missouri.....	29,895	31,643	61,538
Oregon.....	29,895	31,643	61,538
Washington.....	29,895	31,643	61,538
California*.....	29,895	31,643	61,538
Totals.....	205,	231,601	437,397

* Produced a small quantity of pig iron, charcoal and electricity.

The production of Bessemer and low phosphorus iron in 1907 was 13,231,620 tons, a considerable falling off from the total of 13,840,518 tons of such iron in 1906. The table

below shows the production of Bessemer and low phosphorus pig iron by States and by the various districts of Pennsylvania and Ohio:

Production of Bessemer and Low Phosphorus Pig Iron.

States.	First half of 1907.	Second half of 1907.	Total for 1907.
New York.....	467,143	462,376	929,519
Pennsylvania.....	(3,135,603)	(2,600,698)	(5,736,301)
Lehigh Valley.....	64,788	79,694	144,482
Schuylkill Valley.....	254,443	160,316	414,759
Allegheny County.....	1,876,784	1,566,957	3,443,741
Shenango Valley.....	638,495	551,774	1,190,269
Miscellaneous coke.....	301,093	241,957	543,050
Maryland and Virginia.....	220,989	200,969	421,958
West Virginia, Tennessee and Kentucky.....	170,826	153,497	324,323
Ohio.....	(2,045,577)	(1,665,424)	(3,711,001)
Mahoning Valley.....	889,668	680,018	1,569,686
Lake counties.....	602,064	534,851	1,136,915
Hanging Rock bituminous.....	55,712	32,690	88,402
Miscellaneous bituminous.....	498,133	417,865	915,998
Illinois.....	916,089	866,651	1,782,740
Michigan, Wisconsin and Minnesota.....	76,505	26,734	103,239
Colorado and California.....	153,143	69,393	222,539
Totals.....	7,185,878	6,045,742	13,231,620

The production of basic iron last year in contrast with Bessemer, showed an increase over 1906, the totals being 5,375,219 tons and 5,018,674 tons, respectively. By States the production of basic iron is given below:

Production of Basic Pig Iron, Not Including Charcoal Iron.

States.	First half of 1907.	Second half of 1907.	Total for 1907.
New York and New Jersey.....	114,438	100,759	215,197
Pennsylvania.....	881,274	930,733	1,812,007
Allegheny County.....	943,939	828,462	1,772,401
Other counties.....	250,590	291,666	542,256
Virginia and Alabama.....	480,895	552,463	1,033,358
Ohio, Indiana, Illinois, Missouri and Colorado.....	480,895	552,463	1,033,358
Totals.....	2,671,136	2,704,083	5,375,219

The production of spiegeleisen and ferromanganese was 339,348 tons in 1907, against 305,642 tons in 1906. Pennsylvania made 251,747 tons, and the balance, 87,601 tons, was contributed by New Jersey, Maryland, Illinois and Colorado.

The National Metal Trades Association Meeting.

The new Hotel Astor, New York, will be headquarters for the tenth annual convention of this association, as indicated in the monthly bulletin just issued at its Cincinnati headquarters, and the days of the meeting will be Wednesday and Thursday, March 25 and 26. A special effort is to be made for a large attendance at this meeting, because of the urgent necessity for a careful and weighty consideration of pending problems. The Administrative Council will hold a session immediately preceding the convention, and members are invited and expected to present in writing or otherwise, through the commissioner, any suggestions which in their judgment might benefit the association or better its operation.

The annual dinner of the managers, superintendents and foremen of the Pencoyd Iron Works of the American Bridge Company, Pencoyd, Pa., was held at the Pencoyd Club, Wissahickon, Philadelphia, on the evening of January 18. All the various departments of the works were represented. Addresses were made by J. A. Wadsworth, resident engineer, New York City; Paul L. Wolfel, consulting engineer; James L. Bernard, mechanical engineer; R. W. Bailey, contracting manager; A. C. Funk, manager of the Trenton Works, and a number of others.

The rod mill of the Morgan Spring Company at Struthers, Ohio, which has been closed down for some little time, is expected to go on full this week. The wire and nail mills are expected to start single turn this week.

The Forter-Miller Engineering Works, Hartje Building, Pittsburgh, Pa., has received an order for a gas producer plant to be installed in the Braddock Works of the American Steel & Wire Company.

The Pennsylvania Steel Company now has both its furnaces at Lebanon, Pa., in blast, the furnace which was banked on December 1 having started up in the past week.

The Iron and Metal Trades

The volume of new business which is being placed is still small, and it is only occasionally that evidence is forthcoming of some quickening in the demand. It must be confessed that there is some disappointment over the fact that orders have not yet come out in larger quantity with the steady improvement in the financial situation.

There will be a series of conferences to-morrow in many branches of the trade, which may bring a settlement on some important points, notably that of the price of ore for the coming season. Closely connected with the question of prices on crude and finished materials is that of readjustment of wages. The feeling in the trade is quite general that any lowering of prices, if determined upon, should be so timed that it will bring out confident buying. It hardly looks as though that period had arrived yet.

The market for Southern Pig Iron has for the time being settled rather firmly at \$13 for No. 2 Foundry, Birmingham. The strength of the market will be tested, however, by the negotiations now pending for a good sized tonnage by the largest pipe interest, and for about 6000 tons for a Michigan stove manufacturer.

The efforts of Southern makers to market Pig Iron abroad met with their first success this week, when an aggregate of about 4000 tons of Foundry Iron was marketed in Italy.

The low prices on Bar Iron have had a widespread adverse influence, without stimulating business very much. Efforts to put order into chaos are to be made at a special meeting of the Eastern Bar Iron Association this week in this city.

Chicago reports inquiries for Rails from a number of railroads in the West and Southwest, which aggregate about 50,000 tons. There has been a considerable business in Splice Bars and in Spikes from some of the large roads.

Concessions are being made in Plates. The first order for Steel cars, which has been placed for some time, calling for 600 cars, has brought to a Pittsburgh mill 7000 tons of Plates and Shapes.

The Milliken plant has taken the order for 3100 tons for the National City Bank, while the leading interest is the lowest bidder on the Nashville Bridge, involving 3500 tons. The New York Central has called for bids for the second section of the new terminal, 6000 tons, but the first section, involving 4000 tons, has not yet been awarded. It is possible that both may be given out together.

In the lighter lines the most satisfactory reports come from the wire trade, in which both specifications and new business are coming in better.

From practically every important market come the reports of a decidedly better feeling in Old Material. Offerings of about 6000 tons in Chicago were promptly absorbed, and prices have advanced from 50c. to \$1 per ton. In the East a large Steel plant is in the market for 10,000 tons of Steel Melting Scrap. The market is in such shape that consumers must now do careful buying to secure material advantageously.

A leading sales agency has advanced its price for Lake Copper to 14¼c., but in other quarters there is reselling under 14c., some of the offerings coming from consumers. Electrolytic is freely offered at 14c.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

	Jan.29, 1908.	Jan.22, 1908.	Dec.24, 1907.	Jan.30, 1907.
PIG IRON , Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	\$18.25	\$18.25	\$18.25	\$26.50
Foundry No. 2, Southern, Cincinnati	16.00	16.00	16.25	26.00
Foundry No. 2, Local, Chicago..	18.00	18.00	18.00	25.50
Bessemer, Pittsburgh.....	18.90	18.90	19.40	23.35
Gray Forge, Pittsburgh.....	16.90	16.15	17.90	22.50
Lake Superior Charcoal, Chicago	22.00	22.00	23.50	27.00

BILLETS, &c. , Per Gross Ton:				
Bessemer Billets, Pittsburgh...	28.00	28.00	28.00	29.00
Forging Billets, Pittsburgh....	30.00	30.00	30.00	36.00
Open Hearth Billets, Phila....	30.40	30.00	30.00	33.00
Wire Rods, Pittsburgh.....	35.00	35.00	34.00	33.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL , Per Gross Ton:				
Steel Rails, Melting, Chicago...	12.50	12.25	12.00	18.00
Steel Rails, Melting, Phila....	12.00	12.00	11.50	18.75
Iron Rails, Chicago.....	17.00	16.00	15.00	27.00
Iron Rails, Philadelphia.....	16.50	16.50	17.50	27.50
Car Wheels, Chicago.....	18.50	19.00	20.00	24.50
Car Wheels, Philadelphia.....	17.00	17.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh...	14.00	12.50	12.50	18.50
Heavy Steel Scrap, Chicago....	12.00	11.00	10.75	16.00
Heavy Steel Scrap, Philadelphia	12.00	12.00	11.50	18.50

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia..	1.55	1.47	1.75	1.93½
Common Iron Bars, Chicago....	1.55	1.55	1.75	1.81½
Common Iron Bars, Pittsburgh..	1.40	1.40	1.60	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh.....	1.70	1.70	1.70	1.70
Beams, Tidewater, New York...	1.86	1.86	1.86	1.84½
Beams, Pittsburgh.....	1.70	1.70	1.70	1.70
Angles, Tidewater, New York..	1.86	1.86	1.86	1.84½
Angles, Pittsburgh.....	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.80
Skelp, Sheared Steel, Pittsburgh.	1.80	1.80	1.80	1.90

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh.....	2.40	2.40	2.50	2.50
Wire Nails, Pittsburgh.....	2.05	2.05	2.05	2.05
Cut Nails, Pittsburgh.....	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh...	2.50	2.50	2.50	2.45

METALS	Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York.....	14.00	14.00	13.50	24.75	
Electrolytic Copper, New York..	14.00	14.00	13.37½	24.75	
Spelter, New York.....	4.70	4.70	4.30	7.00	
Spelter, St. Louis.....	4.60	4.55	4.20	6.75	
Lead, New York.....	3.75	3.75	3.60	6.30	
Lead, St. Louis.....	3.60	3.60	3.50	6.10	
Tin, New York.....	27.50	27.60	27.00	41.87½	
Antimony, Hallett, New York...	9.00	9.00	8.50	24.50	
Nickel, New York.....	45.00	45.00	45.00	45.00	
Tin Plate, 100 lb., New York...	\$3.89	\$3.89	\$4.09	\$4.09	

Chicago.

FISHER BUILDING, January 29, 1908.—(By Telegraph.)

In the movement toward resumption of activity, Wire and Wire products are taking the same relative position of leadership over other mill products which they occupied before the general slump in October. An encouraging increase, both of specifications and new business, is furnishing tonnage of sufficient volume to warrant the starting up of idle plants, and the more active operation of those already in commission. Some indication of renewed interest in Standard Rail Sections is furnished by the recent appearance in the market of inquiries which include in the aggregate something over 50,000 tons. These emanate chiefly from smaller roads in the West and Southwest, and are regarded as representing imperative needs, which will develop into orders. Nothing, however, is heard of impending purchases by the large trunk lines of important tonnage. More activity is noted in Light Rails, the prices of which are still somewhat irregular, especially on Sections up to 25 lb., owing to the competition of rerolling mills. Railroad Spikes are also in better demand, as is instanced by the greater number of orders recently received, among which is noted one for 4000 kegs. Structural Material is extremely backward in coming out, there having been no noteworthy tonnage closed during the week. All of the finishing mills at the South Works of the Illinois Steel Company are temporarily idle, except the No. 1 Rail mill. The 8, 9 and 12 in. mills of its Bay View plant started up this week to roll a moderate accumulation of Steel Bar specifications, while at Joliet the Billet, Rod

and Merchant mills have resumed operations. Bar Iron mills are somewhat more active in consequence of an improved demand, but the volume of business offered is as yet insufficient to assure full rolling schedules. A decided reaction in Scrap material has lifted the market from its extreme low level, and prices on practically all grades have advanced. About 6000 tons of Railroad Scrap was disposed of during the week at advanced prices. Another reduction of \$1 a ton has been made in Cast Iron Pipe, the demand for which lacks vigor. Bids on 5000 tons of Pipe for St. Paul and Minneapolis will be opened January 31.

Pig Iron.—The market is extremely quiet and featureless. Inquiries continue to come in, but they are generally for small lots, and principally concern deliveries extending through the first half. Many of them are seemingly merely market feelers and are apparently not prompted by actual needs. The entire tonnage placed in this market for the past week or 10 days has been light, demonstrating the fact that melters' stocks are not in urgent need of replenishment. It would seem that the wants of consumers were pretty well covered by recent purchases of low priced Iron, reference to which was made in last week's report, for since the conclusion of that movement, which resulted in the placing of 20,000 to 25,000 tons at around \$12, Birmingham, there has been little doing. In the meantime prices appear to have settled rather firmly around \$13, Birmingham, for No. 2 Foundry, while Northern furnaces are holding pretty evenly at \$18, Chicago, for No. 2. Several of the principal furnace interests are nevertheless adhering, nominally at least, to quotations on a basis of \$13.50, Birmingham. At least two sales aggregating 650 tons were made during the present week on this basis. A few inquiries ranging from 500 to 1500 tons are in the market, which are regarded as likely to result in early orders. Values on the whole are practically unchanged. The following prices are for February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$22.00 to \$22.50
Northern Coke Foundry, No. 1.....	18.50 to 19.00
Northern Coke Foundry, No. 2.....	18.00 to 18.50
Northern Coke Foundry, No. 3.....	17.50 to 18.00
Northern Scotch, No. 1.....	19.00 to 19.50
Southern Coke, No. 1.....	17.85 to 18.35
Southern Coke, No. 2.....	17.35 to 17.85
Southern Coke, No. 3.....	16.85 to 17.35
Southern Coke, No. 4.....	16.35 to 16.85
Southern Coke, No. 1 Soft.....	17.85 to 18.35
Southern Coke, No. 2 Soft.....	17.35 to 17.85
Southern Gray Forge.....	15.35 to 15.85
Southern Mottled.....	15.10 to 15.60
Malleable Bessemer.....	18.50 to 19.00
Standard Bessemer.....	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 6 %	22.40 to 22.90
Jackson Co. and Kentucky Silvery, 8 %	24.40 to 24.90
Jackson Co. and Kentucky Silvery, 10 %	26.40 to 26.90

(By Mail.)

Billets and Rods.—The demand for Forging Billets is exceedingly light, and purchases continue to be confined to small lots for immediate consumption. For the occasional small lots being moved prices remain at \$33 to \$34, Chicago. In consequence of the increasing activity among the Wire mills there is a little better movement in Wire Rods, on which quotations are as follows: Bessemer, \$35; Basic, \$36; Chain, \$37, Pittsburgh.

Rails and Track Supplies.—While the mills are in receipt of no new specifications or orders for Standard Section Rails, other than a few scattered lots of small tonnage, a considerable number of inquiries of a nature that promise orders in the near future have developed. A number of these have been received from small Western and Southwestern roads during the last week, amounting in the aggregate to over 50,000 tons. There is a decided improvement in the demand for Light Rails and Spikes. Of the former, last week's sales included two orders aggregating 1000 tons, about 600 tons of which were for export to Canada. The booking of one order for 4000 kegs of Spikes would indicate that even for maintenance purposes railroads have reached a point where the replenishment of supply stocks is an imperative necessity. Reflecting the improved demand for and stronger feeling in Light Rails, prices are this week revised in accordance with the usual spread of \$1 a ton between the different sections, ranging from 25 to 12 lb. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$28; 20-lb., \$29; 16-lb., \$30; 12-lb., \$31. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—New business is extremely backward in coming out, and while new projects are constantly developing that involve a considerable tonnage of Structural Material, very little business is being placed. Closures for the week include 422 tons for the Pacific Mutual Life Insurance Building, Los Angeles, taken by the Llewellyn Iron Works of that city. A contract for 366 tons for the Home Telephone Building, San Francisco, was let by the Geo. A. Fuller Company, general contractor, to Dyer Brothers. A contract for 3500 tons for the construction of a bridge over

the Cumberland River at Nashville was secured by the American Bridge Company. The accumulation of tonnage is not yet sufficient to warrant resumption of the Illinois Steel Company's Structural mill, which has been idle for several weeks. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—What few buyers there are in the market are seeking only small lots for present requirements, there being no disposition as yet to contract for forward deliveries. The spread between store and mill prices has been narrowed by a reduction of \$2 a ton on the former. Store demand is also small, being restricted to orders of limited tonnage. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72 in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, 0.25c. extra.

Sheets.—The trend toward betterment noted last week has not proved to be strongly progressive, nor can it be said, on the other hand, that the movement has lost ground. Trade, however, continues quiet. Buyers seem content to supply their needs in hand to mouth fashion, and evince no anxiety concerning forward deliveries. Small shipments in fair amount are being made from warehouse stocks in both Black and Galvanized. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c. Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—The spread of \$4 a ton between Steel and Iron Bars, occasioned by the recent reduction in the price of the latter, is diverting more or less business from the Steel Bar mills. It seems probable that steps will soon be taken to restore the equilibrium between these commodities, but just what action will be taken has not yet been decided. The demand for Iron Bars has improved considerably, but Steel Bars are moving slowly. The Bay View mills of the Illinois Steel Company started up Monday on the 8, 9 and 12 in. mills, and accumulation of specifications has also enabled the Republic Iron & Steel Company to put its Moline mill in operation. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.55c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—Orders continue to represent purchases for actual needs and in the aggregate show a slight improvement. It is apparent that dealers are much more anxious to reduce their stocks than to increase them, and in consequence they are only buying what is necessary to maintain assortments. The competition growing out of a desire to decrease stocks has resulted in a demoralization of prices, which have declined to a point that admits of but little or no profit, on a basis of present mill costs. Dealers assert that uncertainty of future values is largely responsible for these conditions. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 to 72½ per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—About the only change observable is a slightly better demand for Locomotive Tubes, orders for which, though not large, are being placed with greater frequency by the railroads. Merchant Tubes are exceedingly dull, both as respects mill and store demand. Mill quotations for future delivery, on the base sizes, are as follows: 2½ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft.

and 2½ in. and larger, and lengths over 22 ft., 10 per cent extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.....	35	35	35
1½ to 2¼ in.....	50	35	35
2¼ in.....	52½	35	35
2½ to 5 in.....	60	47½	47½
6 in. and larger.....	50	35	..

Merchant Steel.—The results of the week indicate a little better feeling among the implement makers, from whose specifications of moderate volume have been received during the week. Otherwise conditions remain unchanged, there being no movement of significance in other directions. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1½ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—Aside from a letting to be held by the town of Minott, N. D., February 3, on 1500 tons of Pipe, no prospective municipal tonnage is reported. There is, however, a somewhat improved demand for small lots ranging from 50 to 100 tons, representing water works extension requirements. Very few sales of, or inquiries for, Gas Pipe are noted; but in view of lower cost occasioned by receding prices, which are this week again reduced \$1 a ton, it is believed that considerable tonnage will develop in the near future. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., \$30; 6 to 12 in., \$29; 16-in. and up, \$28, with \$1 extra for Gas Pipe.

Old Material.—The past week's railroad offerings, which amounted to upward of 6000 tons, found a better market than has been experienced for several weeks. It is understood that practically all of this tonnage was sold at prices ranging from 50c. to \$1 a ton above last week's quotations. Of No. 1 Wrought on the Chicago, Burlington & Quincy's list, 1300 tons, brought over \$12.50; 700 tons of Iron Rails were taken at \$17.25, 600 tons of Steel Rails at \$13.25. Railroad Malleable sold for \$12.25. An offer of \$18 a ton on another lot of Iron Rails was declined. These transactions had the effect of strengthening the general market. The rolling mills figured conspicuously among the purchasers, though the bulk of the tonnage was taken by dealers. Melters, too, bought a little more freely, and as a result of the demand from this source No. 1 Cast Scrap is on a level with Pig Iron. We quote, per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails.....	\$17.00 to \$17.50
Old Steel Rails, rerolling.....	13.00 to 13.50
Old Steel Rails, less than 3 ft.....	12.50 to 13.00
Relaying Rails, standard sections, subject to inspection.....	22.00 to 25.00
Old Car Wheels.....	18.50 to 19.00
Heavy Melting Steel Scrap.....	12.00 to 12.50
Frogs, Switches and Guards, cut apart.....	12.50 to 13.00
Mixed Steel.....	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates.....	\$15.00 to \$15.50
Iron Car Axles.....	16.50 to 17.00
Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	12.25 to 12.75
No. 2 Railroad Wrought.....	10.75 to 11.25
Railway Springs.....	11.50 to 12.00
Locomotive Tires, smooth.....	15.00 to 15.50
No. 1 Dealers' Forge.....	9.50 to 10.00
Mixed Busheling.....	8.00 to 8.50
Iron Axle Turnings.....	7.50 to 8.00
Soft Steel Axle Turnings.....	7.50 to 8.00
Machine Shop Turnings.....	7.50 to 8.00
Cast Borings.....	5.00 to 5.50
Mixed Borings, &c.....	5.00 to 5.50
No. 1 Mill.....	7.50 to 8.00
No. 2 Mill.....	6.50 to 7.00
No. 1 Boilers, cut to Sheets and Rings.....	7.50 to 8.00
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	11.50 to 12.00
Railroad Malleable.....	12.00 to 12.50
Agricultural Malleable.....	10.50 to 11.00
Pipes and Flues.....	9.00 to 9.50

Metals.—What was last week felt to be the beginning of a freer movement in Metals has not been productive of further developments. Consumers of Copper still adhere to the practice of buying what they need for present consumption, and in consequence orders of from one to five tons predominate, with but few of the latter size being placed. Business in other Metals is correspondingly quiet, and prices are practically unchanged. Old Metals share the general apathy exhibited in new material. We quote as follows: Casting Copper, 14¼c.; Lake, 14¾c. to 15c., in car lots for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 30c.; small lots, 31½c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.60c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is \$7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13¼c.;

Heavy Copper, 13¼c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10¼c.; Light Brass, 6½c.; Lead Pipe, 3¾c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Pittsburgh.

PARK BUILDING, January 29, 1908.—(By Telegraph.)

Pig Iron.—A meeting of the blast furnace interests of the Pittsburgh, Mahoning Valley, Shenango Valley, Wheeling, Columbus, Scottsdale and other nearby districts, was held in the Duquesne Club, Pittsburgh, on Monday, at which practically all agreed to maintain prices for the different grades of Pig Iron on the following basis: Bessemer, \$18; Basic, \$17; No. 2 Foundry, \$17, and Gray Forge, \$16, all at Valley furnace, to which a 90c. freight rate to Pittsburgh should be added. J. G. Butler, Jr., of Youngstown, was chairman of the meeting. Reports are current of Bessemer Iron being offered and sold on the basis of \$17, Valley furnace, but when these reports are investigated they are found to be untrue. It is stated that not a furnace interest in the Mahoning and Shenango valleys is offering Bessemer Iron as low as \$17, at furnace. A meeting of the Ore Association is being held in Cleveland to-day, at which action in regard to Ore prices for this year is expected to be taken. It is regarded as practically certain that last year's prices will be reaffirmed. A report will be sent from this meeting to the general meeting of the Pig Iron and Ore Committee to be held in New York on Thursday, and it is believed that also at that meeting last year's prices on Ore will be reaffirmed. In conformity with the action taken by the furnace interests, at the recent meeting, we quote Bessemer Iron at \$18, Basic \$17, Northern No. 2 Foundry \$17 and Gray Forge \$16, all f.o.b. Valley furnace. It is possible that small lots of Pig Iron might be obtained from dealers or from other sources at less, but the Valley furnace interests are quoting these prices on the small inquiries going. There is little active buying in Pig Iron, but the consumption is heavier than the actual output, and stocks are decreasing.

Steel.—We note that there are more inquiries in the market for Billets and Sheet and Tin Bars, and some tonnage on Bars that has been held up is now being specified for, so that more Steel is moving than for some time. We continue to quote Bessemer and Open Hearth Billets at \$28, and Sheet and Tin Bars at \$29, Pittsburgh.

(By Mail.)

Conditions in the Steel trade are showing betterment slowly but steadily. As an instance of this, we can state that the Carnegie Steel Company, which in December was down to about 22 per cent. of its Ingot capacity, is now running very close to 50 per cent. There has been an increase in orders on practically all kinds of Finished Iron and Steel, but as yet they are small and for actual needs. There is not much disposition on the part of the large trade to contract ahead until the situation has further cleared up. The railroads are buying a little more freely, the Denver & Rio Grande having placed an order for 600 steel cars with the Pressed Steel Car Company, while the Louisville & Nashville has recently bought about 2500 tons of Splice Bars from the Carnegie Steel Company and 15,000 kegs of Railroad Spikes from a local maker. Another Southern road is in the market for a similar tonnage in Splice Bars and Spikes, and this business is likely to be placed this week. None of the roads has yet placed orders for its Rails for 1908, and new tonnage is very small. The Pig Iron market continues quiet, but the feeling is growing that prices are pretty close to bottom. With last year's prices on Ore, \$17 at furnace for Bessemer Iron, \$16 for Northern No. 2, and \$15 for Northern Forge, do not leave much margin of profit to some furnaces. Some tonnage held up in Sheet and Tin Bars is coming out, and inquiries for Billets are better. New business in Wire products, Hoops and Bands, Tin Plate and Pipe is showing a steady increase, but other lines, such as Structural Material, Plates, Steel Bars and Sheets, are quiet. There is some inquiry for Furnace Coke on contracts and relatively low prices are being named. We also note a better inquiry for Scrap, and prices have shown betterment.

Ferromanganese.—It is reported that an Eastern Steel company has placed an order for 1500 tons of foreign Ferro for deliveries running through the year. A local consumer has bought about 100 tons of foreign Ferro, April to July delivery, at about \$48.50, Pittsburgh. We quote foreign 80 per cent. Ferro in lots up to 100 tons at \$48.50 to \$49, while for large lots, of 500 tons and over, a slightly lower price might be named.

Muck Bar.—We do not hear of any new inquiries in the market, and with the continued decline in prices of Forge Iron, Muck Bar is weak. We quote best grades of Muck Bar, made from all Pig Iron, nominally at \$28 to \$29, Pittsburgh.

Skelp.—No new business is offering, and the situation is very quiet. We quote: Grooved Steel Skelp, 1.60c.; Sheared Steel Skelp, 1.70c.; Grooved Iron Skelp, 1.80c., and Sheared Iron Skelp, 1.90c., f.o.b. Pittsburgh.

Rods.—There is not much new business being offered, but we are advised that the market is firm, on the basis of \$35 for Bessemer Rods, \$36 for Open Hearth, and \$37 for Chain Rods, f.o.b. Pittsburgh.

Steel Rails.—The Carnegie Steel Company recently made a shipment of 4000 tons of Standard Sections to a Texas road, and has entered orders in the past week for about 1500 tons of Light Rails. The Louisville & Nashville Railroad recently placed a contract with the Carnegie Steel Company for 2500 tons of Splice Bars, and another Southern road is in the market for a similar tonnage, and also for about 15,000 kegs of Railroad Spikes. None of the large orders for Rails from Northern roads, which have been pending for some time, has yet been placed, but there have been some releases on old orders, which serve to keep the Edgar Thomson mill of the Carnegie Steel Company running to about half capacity. Prices on Light Rails, which are still being shaded \$3 to \$4 a ton by mills that re-roll Rails, are as follows: 25 to 45 lb. Sections, \$28; 20-lb., \$29; 16-lb., \$30, and 12-lb., \$32. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—The 600 Steel cars recently placed with the Pressed Steel Car Company by the Denver & Rio Grande Railroad will require about 7000 tons of Plates and small shapes, which will be furnished by a local mill. The general demand for Plates is quiet and none of the mills is running to more than about 50 per cent. of capacity. Prices are fairly well maintained, but are still being shaded from \$1 to \$2 a ton by some mills, mostly on the narrow sizes. We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell grade of steel is abandoned.	

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—No large tonnage from the local district has been placed in the past week, and the general condition is quiet. A good many large jobs are held up by the present unsatisfactory money conditions, and also from the fact that in some quarters the opinion prevails that prices on Structural Steel and Steel Bars may be readjusted to a lower basis. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—This is the dull season in the Sheet trade. We note, however, that some tonnage on contracts held up in November and December is now being specified for, showing that jobbers are receiving more orders from consumers. Jobbers are also reassorting their stocks and are placing orders a little more freely. In the absence of any large new business, and the fact that most concerns are operating their mills to less than 50 per cent. capacity, we are advised that prices are firm. We quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets \$1.75 per square and Galvanized Roofing Sheets, No. 28, \$3.10 per square for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—As showing the increase in orders for Tin Plate, we note that the American Sheet & Tin Plate Company is now operating about 60 per cent. of its Tin mill capacity, against 12 per cent. in December. Outside Tin Plate mills are also doing better in the matter of operating, and have a fair tonnage on their books. Reports are that some of the large can companies are not receiving orders for cans which are usually placed about this time, and, in con-

sequence, are not placing orders for Bright Plates. It is the opinion that in March and April there will be a very heavy demand for Tin Plate, and that some consumers that are delaying placing their contracts will have trouble getting deliveries. We are advised that prices on Tin Plate, which went into effect January 6, are being strictly maintained. We quote at \$3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Bars.—The best that can be said on Iron and Steel Bars is that only a fair tonnage is being placed, but which is far short of being large enough to give the mills full work. It is now generally believed that the recent action of the Bar Iron makers in reducing prices was a mistake, as the reduction does not seem to have stimulated demand to any extent, and, in addition, the lower prices are being shaded. We note that prices on Steel Bars are being maintained, and it is believed will not be reduced. The official price on Iron Bars is 1.40c., Pittsburgh, for Western shipment, and 1.55c. for delivery in the Pittsburgh District, but we are advised that both these prices are being shaded. Steel Bars are firm, at 1.60c., Pittsburgh.

Spelter.—Prices quoted on Spelter for future delivery are firm, but for spot shipments low figures are being made. We quote prime grades of Western Spelter for prompt delivery at 4.40c., St. Louis, equal to 4.52½c., Pittsburgh, while for future delivery about 4.50c., St. Louis, is asked. Actual tonnage being placed is light.

Hoops and Bands.—Since the announcement of the reaffirmation of prices was sent out to the trade by the three leading mills a considerable tonnage has been placed, some of it for delivery all through this year. Shipments by the mills are fairly heavy and conditions are more active than for some time. We quote Steel Hoops at \$2, base, full Hoop card extras; Steel Bands, \$1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

Spikes.—For the first time in several weeks we can report some buying of Spikes by the railroads, the Louisville & Nashville having placed an order for 15,000 kegs, while the Delaware, Lackawanna & Western is inquiring for 1000 kegs. It is expected that other roads will soon be in the market. The demand for smaller sizes is fair, but none of the mills has much business booked ahead. We quote Railroad Spikes, standard sizes, 9-16 x 5½ in., at \$1.80 to \$1.85, and the smaller sizes at \$1.95 to \$2 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—The situation is still quiet, but in the past week there have been some small orders placed by the trade which represent only actual needs. Shafting continues dull, and it is stated that discounts are being shaded to some extent on some of the actual business that is being placed. We quote: Cold Rolled Shafting, 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory; Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—We can report a decided increase in new business, while specifications against contracts are coming in more freely. One of the oil companies has recently bought 3 miles of 10-in. Iron Pipe and is inquiring for 10 miles more. We also note that an inquiry is in the market for about 30 miles of 8-in. Steel Pipe. The Pipe mills are running more heavily, and requirements now probably amount to 40 per cent. or more of capacity. Prices on Steel Pipe are firm, but on Iron Pipe are still being shaded. The net discount on Steel Pipe to the large trade on ¾ to 6 in. is 74 and 5 per cent. off list, while on Iron Pipe, ¾ to 2 in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

	Merchant Pipe.	
	Black.	Galv.
Jobbers, carloads.		
Steel.		
¾ to 1 in.....	.65	.49
1 in.....	.67	.53
1½ in.....	.69	.57
2 to 6 in.....	.73	.63
7 to 12 in.....	.70	.55
Extra strong, plain ends:		
¾ to 1 in.....	.58	.46
1 to 4 in.....	.65	.53
4½ to 8 in.....	.61	.49
Double extra strong, plain ends:		
¾ to 8 in.....	.54	.43

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—The demand for Railroad Tubes is improving, a fair tonnage having been recently placed, with inquiries in the market from several more roads. We also note a moderate demand for Merchant Tubes, prices on the latter still being shaded to some extent. Discounts on Mer-

chant Tubes for small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

Boiler Tubes.		Iron.	Steel.
1 to 1 1/4 in.	.....	42	47
1 1/4 to 2 1/4 in.	.....	42	59
2 1/4 in.	.....	47	61
2 3/4 to 5 in.	.....	52	65
6 to 13 in.	.....	42	59
2 1/4 in. and smaller, over 18 ft. long, 10 per cent. net extra.			
2 3/4 in. and larger, over 22 ft. long, 10 per cent. net extra.			

Coke.—The output of Coke in the Upper and Lower Connellsville regions is showing an increase, due to the starting up by the Frick Coke Company of a number of idle ovens, the Coke being needed for blast furnaces of the Steel Corporation that have recently started. Low prices continue to be made on both Furnace and Foundry Coke, and we note that best grades of Connellsville Furnace Coke are still being offered as low as \$1.90, while other grades of Furnace Coke, not rated as high in quality as strictly Connellsville, are offered at \$1.75 at oven or lower. Connellsville 72-hr. Foundry Coke is held at about \$2.50 a ton at oven, and other grades are offered as low as \$2 a ton at oven. There are now 36,158 ovens in the Upper and Lower Connellsville regions, of which 21,689 were out of blast last week and 14,469 were active. The output was 143,838 tons, a decided increase over the previous week.

Iron and Steel Scrap.—We note a decided betterment in the Scrap trade, consumers buying more freely, and prices have improved from 50c. to \$1 a ton. Consumers of Scrap realize that prices of this material got very much lower in the recent slump than actual conditions warranted, and with higher prices probable they are now willing to stock up, and more tonnage has been sold in the past two weeks than for some time. We have advanced prices on nearly all grades and now quote as follows: Heavy Steel Scrap, for Pittsburgh, Steubenville or Sharon delivery, \$14; No. 1 Cast Scrap, \$15.25 to \$15.50; Low Phosphorus Melting Stock, \$17.50 to \$18; Bundled Sheet Scrap, \$9.50 to \$10; No. 1 Busheling Scrap, \$14 to \$14.50; No. 2, \$12 to \$12.50; Cast Iron Borings, \$8 to \$8.50; Steel Axles, \$16; Iron Axles, \$20.50 to \$21; Rerolling Rails, \$14 to \$14.50; Old Steel Rails, short pieces for Open Hearth use, \$14; Standard Sheet Bar Crop Ends, \$15 to \$15.50, and Grate Bars, \$13 to \$13.50. All above prices are per gross ton f.o.b. Pittsburgh. We note sales as follows: 1000 tons Heavy Steel Scrap at \$14; 200 tons of Grate Bars, \$13.50; 1000 tons Rerolling Rails, \$15; 500 tons Cast Iron Borings, \$8, and 500 tons No. 1 Cast Scrap, \$15.

Bell Brothers, dealers in Iron and Steel Scrap and Metals, have completed and equipped a modern plant at Twenty-seventh street and Allegheny Valley Railroad, Pittsburgh, where the firm will be located after February 1. All machinery in the new plant is electrically driven.

The Schubb & Caplan Scrap Iron & Metal Company, Pittsburgh, has been organized by Elias Schubb, Morris Caplan and C. Ward Eicher, to carry on a general business in Iron and Steel Scrap.

Birmingham.

BIRMINGHAM, ALA., January 27, 1908.

Pig Iron.—The market is not so active as at the time of last report, but is considerably firmer. Sales have been principally to the general foundry trade, which is encouraging in view of the fact that new business in this line has been slow to develop. While lots contracted for have been comparatively small, the aggregate indicates quite an improvement in the demand. Producers who have heretofore been willing to make concessions have apparently booked sufficient tonnage to stiffen their quotations, and it is believed that \$13 Iron has entirely disappeared. In fact, the only sale recently reported on this basis was a lot of 500 tons made during the early part of the week, and it is authentically stated that the same brand could not now be had at this price. A small lot for immediate shipment has brought \$14, but this sale was made under special conditions, and \$13.50 on a No. 2 Foundry basis, f.o.b. Birmingham, with a differential of 50 cents per ton for lower grades, is the market quotation. It is known that one company has disposed of its output for the first quarter, and is not making quotations on deliveries further advanced, while the entire stock on the yards of another interest, which is believed to be the largest single accumulation in the district, has been sold, and the brand is not being offered. It is believed that contracts covering upward of 100,000 tons have been placed with local producers since January 1, and as this is in excess of the available stock by probably 40 per cent., it is highly probably, to say the least, that the lowest level of prices has been reached; especially is this true, in view of the fact that producers are not disposed to put idle capacity in operation except as order books require it. The output of Basic Iron has recently increased, one of the Tennessee Coal, Iron & Railroad Company's stacks at Ensley having been put in operation after a suspension of about three

weeks for repairs. Out of the seven stacks in the district five are now in blast.

Cast Iron Pipe.—The recent developments in the Pig Iron market, together with the improvement in financial conditions as shown by latest clearing house statements, has had a very encouraging effect. The awarding of contracts for Minnesota points during the coming week is believed to be the initiative of a period of activity, and as the prices which result will no doubt be a criterion of the market, the lettings are being awaited with interest. There is some idle capacity among local producers, but the lettings by small municipalities and requirements for maintenance work aggregate a significant tonnage, and order books generally are in good condition. We revise nominal quotations as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$28; 8 to 12 in., \$26; over 12-in., average, \$25, with \$1 per ton extra for Gas Pipe.

Old Material.—No improvement is to be noted in the condition of the market. There is some demand for Stove Plate and Cast Scrap, but sales are of carloads only, and buyers are still indisposed to take hold other than for actual requirements. None of the mills has resumed operation, and there is apparently no demand whatever for Wrought and Steel Scrap. Revised nominal quotations are as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$21.00 to \$21.50
Old Iron Axles.....	17.50 to 18.00
Old Steel Axles.....	16.00 to 16.50
Old Car Wheels.....	20.50 to 21.00
No. 1 Railroad Wrought.....	16.50 to 17.00
No. 2 Railroad Wrought.....	12.00 to 12.50
No. 1 Country Wrought.....	12.50 to 13.00
No. 2 Country Wrought.....	10.50 to 11.00
Wrought Pipe and Flues.....	12.50 to 13.00
Railroad Malleable.....	12.50 to 13.00
No. 1 Steel.....	13.00 to 13.50
No. 1 Machinery Cast.....	10.50 to 11.00
Stove Plate and Light Cast.....	9.50 to 10.00
Cast Borings.....	6.75 to 7.25

Philadelphia.

PHILADELPHIA, PA., January 28, 1908.

The markets for both crude and finished materials have quieted down to some extent during the past week. The business transacted recently has been confined, in almost every case, to small tonnages to piece out consumers' requirements, there being still no disposition to do any business to speak of for forward delivery. Melters in many cases placed orders for their immediate needs earlier in the month, and are waiting further developments before again placing business. While manufacturers generally feel rather optimistic regarding the future, there is hardly enough new business coming out to keep going plants running on their present basis, which in the majority of cases is somewhere around 50 per cent. of their capacity. Financial matters show a considerable betterment, and while business does not respond very fully at the time, it is believed that with a further financial recovery more confidence will be established in business generally. The railroads, however, which are one of the heaviest factors as far as buying is concerned, show no inclination to come into the market. It is believed by many that until the railroads again become buyers business generally will be more or less restricted.

Pig Iron.—The market has drifted into a rather quiet condition. Buying during the week has been very much scattered. Consumers have for the greater part placed orders for their needs during the next 30 or 60 days and are now rather inclined to await further developments regarding the probable consumption, as well as the price situation, before placing additional orders. Consumption continues light and melters' requirements are, therefore, proportionately less; so that, unless the demand improves, stocks on hand, together with purchases already made, will carry not a few over the first quarter. Business transacted during the past week has been confined almost entirely to the Foundry grades. There has been absolutely no demand for Steel making Irons, as Steel makers have in most cases large tonnages of Iron still due them on purchases made last year, and as plants are running extremely light, the consumption of stocks on hand is not very large. The same condition exists regarding Bar Iron makers. Rolling mills in operation are running at reduced capacities, and the prices now obtained for Bars preclude the use of Pig Iron in their manufacture to a considerable extent. The demand for Pipe Irons has quieted down considerably since the recent heavy purchases, in which Southern Iron was an important factor, and Southern Irons of all grades have again become rather inactive. Virginia Irons have also experienced a falling off in the demand, and while fairly good sales of these Irons, both Foundry and Pipe grades, were made early in the month, the tonnage sold recently has been comparatively small. Prices of Pig Iron appear to be holding firmly, and sellers who have been on the outside have not been making any very extensive sales at prices under the ruling quotations, inasmuch as it appears to be the policy of buyers not to take more Iron than is needed for early consumption, and as a rule the prevailing prices of standard grades are not

considered too high. As we have noted before, sales during the week have been confined to the Foundry grades, the tonnages varying from carload lots for prompt shipment up to lots of several hundred tons for later delivery. A lot of 300 tons of No. 2 X was sold at \$18.25 for delivery in March and April, while 600 tons was sold for delivery during the first half, but there is not much disposition shown to purchase for the second quarter, while nothing at all has been heard of for deliveries beyond mid-year. Prices quoted for early delivery in buyers' yards, eastern Pennsylvania and adjoining territory, range about as follows:

No. 2 X Foundry.....	\$18.25 to \$18.50
No. 2 Plain.....	17.75 to 18.00
No. 3 Foundry.....	17.25 to 17.50
Gray Forge.....	16.50 to 16.75
Basic.....	17.25
Low Phosphorus.....	24.50 to 25.00

Ferromanganese.—The market is extremely quiet. There is practically no buying except in scattered odd lots. Sellers who have stocks on hand quote about \$47 to \$49, Baltimore, for prompt shipment.

Steel.—There has been a little more inquiry for Steel and makers take a more encouraging view of the situation. The Alan Wood Iron & Steel Company accumulated enough orders to start up the blooming mill at its Ivy Rock plant this week. The Open Hearth furnaces, however, have not yet been started, as a considerable stock of cold Ingots is on hand. The business coming out is individually small, however, and a considerable increase will be necessary to start the plant on the whole. Prices do not show any marked change. Ordinary Rolling Steel for delivery in this territory is quoted at \$30.40, while Forging Steel ranges from \$32.40 to \$33.40, delivered, according to analysis.

Plates.—While there is still more or less irregularity in the inquiry for Steel Plates, the demand is somewhat better. Local interests have taken some pretty fair orders recently for Tank, Boat and Bridge Plates, in certain instances running up to 500 and 600 tons. Mills as a rule are a little better fixed as far as tonnage is concerned, but do not get enough business to enable them to run over half their capacity. The greater proportion of the business coming out is for prompt shipment, consumers not anticipating their needs to any material extent. Prices are being fully maintained and range about as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.85	1.90
Flange or Boiler Steel.....	1.95	2.05
Commercial Firebox.....	2.05	2.10
Marine.....	2.25	2.30
Locomotive Firebox Steel.....	2.35	2.40
The above are base prices for ¾-in. and heavier. ing extras apply:		
		The follow- ing Extra per 100 lb.
3-16-in. thick.....		\$0.10
Nos. 7 and 8, B. W. G.....		.15
No. 9, B. W. G.....		.25
Plates over 100 to 110 in.....		.05
Plates over 110 to 115 in.....		.10
Plates over 115 to 120 in.....		.15
Plates over 120 to 125 in.....		.25
Plates over 125 to 130 in.....		.50
Plates over 130 in.....		1.00

Structural Material.—Some few additional orders for Structural Material have come out, but the tonnage has not been very heavy. One of the local concerns booked an order for 500 tons for a building in the South. Some small bridge work has also been placed, together with a moderate volume of miscellaneous material. Mills are being operated at 50 to 75 per cent. of their capacity and makers feel more encouraged as to the future. Prices are firm and unchanged, 1.85c. to 2c. being quoted, according to specification.

Bars.—The situation in the Bar Iron trade shows practically no change. Prices are still very much unsettled, although not so much is heard of the extremely low prices previously mentioned. Refined Bar Iron makers are not inclined to take orders under 1.65c., delivered, in this territory, but common Iron Bars can be had at about 1.40c., Eastern mill, while still lower prices are talked of. The Eastern Bar Iron Association will hold a meeting on January 31, when the question of prices will no doubt be fully discussed. Meanwhile the tonnage of new business coming out is not large, and mills that are in operation continue to work at reduced capacities.

Sheets.—The demand does not show much change. Buyers only take sufficient quantities to meet immediate needs, no forward business coming out. Mills, therefore, do not gain much on tonnage and are being operated at about half capacity. Mill shipments are quoted as follows, with a tenth extra for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.70c.; Nos. 25 to 26, 2.80c.; No. 27, 2.90c.; No. 29, 3c.

Old Material.—There is a little better feeling in the market. Railroad Wrought and Borings and Turnings have been in somewhat better demand, and some few sales of these grades have been announced. Heavy Melting Steel has been the subject of some inquiry, although no heavy tonnages have as yet been sold. A fair tonnage of Low Phosphorus Scrap has been sold at the ruling price, but the

other grades have been inactive. We quote nominally for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, about as follows:

No. 1 Steel Scrap and Crops.....	\$12.00 to \$12.50
Low Phosphorus.....	18.00 to 18.50
Old Steel Axles.....	18.00 to 18.50
Old Iron Axles.....	23.00 to 24.00
Old Iron Rails.....	16.50 to 17.50
Old Car Wheels.....	17.00 to 17.50
Choice No. 1 R. R. Wrought.....	15.00 to 15.50
Machinery Cast.....	15.00 to 15.50
Wrought Iron Pipe.....	11.50 to 12.00
No. 1 Forge Fire Scrap.....	10.50 to 11.00
No. 2 Light Iron.....	8.00 to 8.50
Wrought Turnings.....	9.00 to 9.50
Stove Plate.....	12.50 to 13.00
Cast Borings.....	7.00 to 7.50
Grate Bars.....	12.00 to 12.50

Coke.—The market has been rather dull. Furnace Coke has been in very light demand, while that for Foundry Coke has also been quiet. Some producers maintain their prices without very extensive sales; others are not so firm, but sales are small owing to the inactivity in the Iron trade. Foundry Coke is held at \$2.50 to \$2.75 at oven, while Furnace Coke can be done at \$1.90 to \$2.25 at oven. We quote for delivery in the Philadelphia territory the following range of prices:

Connellsville Furnace Coke.....	\$4.05 to \$4.40
Foundry Coke.....	4.65 to 4.90
Mountain Furnace Coke.....	3.75 to 4.10
Foundry Coke.....	4.35 to 4.60

Cincinnati.

CINCINNATI, OHIO, January 29, 1908.—(By Telegraph.)

Various incidents of the week suggest improvement and a gradual restoration of confidence, but as yet conditions are not nearly normal. Collections are still slow, although money is getting easier daily. The little buying movement of the week in Coke has encouraged selling agents to feel that the melt is increasing and that more Iron will soon be needed. The largest Pipe interest is negotiating some good sized tonnage, but details are being very carefully guarded. The Stove people are showing a little activity, rolling mills of the central territory are slightly increasing their output, and several new mills are scheduled to start some time in the early spring. Selling agents in the various Steel lines report a little better interest manifest, and some promise of business, but present sales are limited to car lots and smaller. Dealers in Old Material are just beginning to realize that Scrap is any kind of factor in the Iron and Steel manufacturing world, and so some fairly good sales are reported, but at extremely low prices.

Pig Iron.—There is some inquiry for Foundry Iron for prompt shipment and a little movement, but in small lots. Sellers in this section are watching for the result of an inquiry from a Michigan stove manufacturer, who asks for 6000 tons of Analysis Iron, divided about equally between Northern and Southern, for delivery extending through the second, third and fourth quarters. The matter has been put up to the furnaces, which have not as yet quoted beyond July 1. An added tonnage of something like 3000 is available if the price quoted is satisfactory. A sale that is being consummated to-day is one of 400 tons of Malleable for a northern Ohio consumer. The price is said to be close to \$17, Ohio furnace. It is known that prominent Pipe interests, other than those concerned in the Massillon and the Philadelphia deal, have negotiated a considerable tonnage of Iron recently and at especially attractive figures. Persistent rumor tells of purchases at \$13, and even less, on Southern No. 2 for spot Iron, and that \$16.50 and better has been done on the same grade of Northern, but in none of the cases was the tonnage large. Generally speaking, the furnaces in both districts seem to be holding the quoted price remarkably well, at \$13 and \$16.50 to \$17, respectively. While Silicons are quoted on the basis of \$21 at furnace for 8 per cent., it is said that this figure has been shaded. Basic at Valley furnace is quoted at \$16.50 to \$17.50 and Bessemer at \$17, Valley furnace. Local foundries are not increasing their melt to any appreciable extent, and inquiry from that quarter is light. The sale is so limited that it cuts no figure in the market. Until the price for the Michigan inquiry of 6000 tons is out, no reliable figures will be obtainable for deliveries extending beyond the first half. For immediate shipment and for February and March and second quarter we quote as follows, the freight being, from the Birmingham District, \$3.25, and from the Hanging Rock District, \$1.20:

Southern Coke, No. 1.....	\$16.50 to \$17.00
Southern Coke, No. 2.....	16.00 to 16.50
Southern Coke, No. 3.....	15.50 to 16.00
Southern Coke, No. 4.....	15.00 to 15.50
Southern Coke, No. 1 Soft.....	16.50 to 17.00
Southern Coke, No. 2 Soft.....	16.00 to 16.50
Southern Coke, Gray Forge.....	14.50 to 15.00
Southern Coke, Mottled.....	14.00 to 14.50
Ohio Silvery, 8 per cent. Silicon.....	22.20 to 23.20
Lake Superior Coke, No. 1.....	18.20 to 18.70
Lake Superior Coke, No. 2.....	17.70 to 18.20
Lake Superior Coke, No. 3.....	17.20 to 17.70

Car Wheel Irons.

Standard Southern Wheel.....	\$25.75 to \$26.25
Lake Superior Car Wheel.....	26.50 to 27.00

(By Mail.)

Coke.—There is a little more interest in the Coke market. Some requisitioning on contracts is noted, and the spot shipment is improving, particularly on Foundry grades. The largest local agencies report several orders in prospect, going 100 carloads and over. The range on Connellsville Foundry is about \$2.40 to \$2.65, at oven; Furnace, \$1.75 to \$2.25. On Virginia grades, spot and February delivery Foundry is quoted at \$2.40 to \$2.50; Furnace, \$1.75 to \$1.85. There is not much contracting being done, and a few instances of shading on spot lots is noted. There is some foundry business going which indicates that the melt is increasing.

Finished Iron and Steel.—Relaxation of prevailing conservatism in banks and renewal of agitation in building enterprises planned prior to October of last year are expected to develop a marked improvement in finished lines soon. Buying is still of the hand to mouth order, but prices are being rigidly adhered to. Salesmen from the large distributing offices report a better feeling abroad, and report some orders placed for tonnages of fair size dependent on rapidity of return to normal conditions. Store prices are unchanged. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.75c., half extras; small lots from store, 1.90c., base, half extras; Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., half extras; Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c.; Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c.; Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c.; Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c.; No. 12, carload lots, 2c.; small lots from store, 2.35c.; Sheets (light), Black, No. 28, carload lots, 2.65c.; Galvanized Sheets, No. 28, carload lots, 3.70c.; Tin Plate, 100-lb. basis, 112 Sheets, 14 x 20, 3.70c., Pittsburgh; Steel Tire, 4-in. or heavier, carload lots, 1.95c., base; Plates, 3-16 in. and No. 8, carload lots, 2c.; small lots from store, 2.25c.

Old Material.—The first opportunity for several weeks to record any kind of interest in the Scrap market is presented this week. There is a little buying, confined chiefly to Melting Steel and Relayers. A good sized tonnage of the latter has been sold by a local dealer for shipment to Mexico and the Pacific Coast. Some metals have been sold for shipment to London also. The machine tool concerns are showing a little more interest in the Old Material market, and a few orders are coming in from the foundries. The following prices are given as about representative of the local market, and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton.....	\$11.00 to \$12.00
Cast Borings, net ton.....	4.00 to 5.00
Steel Turnings, net ton.....	5.50 to 6.00
No. 1 Cast Scrap, net ton.....	12.00 to 13.00
Burnt Cast and Wrought, net ton.....	7.00 to 8.00
Old Iron Axles, net ton.....	14.50 to 15.50
Old Iron Rails, gross ton.....	14.50 to 15.50
Old Steel Rails, long, gross ton.....	11.50 to 12.50
Relaying Rails, 56 lb. and up, gross ton.....	22.00 to 23.00
Old Car Wheels, gross ton.....	16.00 to 17.00
Low Phosphorus Scrap, gross ton.....	13.50 to 14.50

Cleveland.

CLEVELAND, OHIO, January 28, 1908.

Iron Ore.—Although the question of Ore prices for the coming season is attracting more attention among consumers, the producers show no inclination to take action. Shippers say that they are getting no inquiries for Ore at present, and that no one will want to buy during the next three months. For that reason they say there is no reason for fixing prices now, and that it would be much better to wait until later when a better forecast can be made regarding activity in the Iron and Steel industries during the year. The majority of the mine operators seem to be in favor of maintaining last year's prices, and a number of merchant furnace interests have expressed themselves as opposed to a reduction in prices for this season. They point to the fact that should a reduction be made, the value of the stock piles they will have on hand at the opening of navigation will be considerably depreciated. Should their furnaces go in blast at an early date, it is estimated that some furnace interests will have enough of last season's Ore to last them until September 1. No new shipping orders for removal of Ore from the docks to the furnace yards are being received, and some small shipping orders on which a few carloads a week have been going forward have been canceled the past week. Nominal Ore prices remain as follows at Lake Erie docks, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range non-Bessemer, \$4.25; Mesaba non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—The market has taken on a firmer tone as the result of the action of some of the furnace interests in fixing \$17 at furnace as the minimum price for No. 2 Northern Foundry Iron for first quarter and first half delivery. A local interest that handles the product of two Valley furnaces, which sold considerable tonnage during the previous two weeks at \$16.50 for the first half for No. 2, is holding firmly at \$17 at furnace, and announces that it will sell no Iron at a lower price for future delivery. Local furnaces are also holding for better prices, and are not quoting under \$17 for No. 2 for outside delivery, as compared with \$16.50 a week ago. For local delivery a price of \$17.85, delivered, is asked, as compared with \$17.25, which has been the ruling quotation for No. 2 for the past few weeks. The active buying movement which was in progress a week ago has disappeared, and but few sales and inquiries are noted. The only sale of any size reported was 1000 tons each of Northern and Southern Iron for first half delivery to a stove interest having a foundry in northern Ohio. This consumer first came in the market with an inquiry for 400 tons for spot shipment, but concluded that the condition of the market warranted making a purchase covering the first half. Other sales have been mostly car lots for immediate needs. Although the price of \$17 at furnace is now being maintained for the first half and first quarter, furnaces that have Iron on their stock piles are making a little lower quotation for spot shipment. There are a number of inquiries for Southern Iron in lots of 100 to 300 tons, but very few sales are reported. There is an occasional inquiry for Basic Iron, but a local interest has refused to make quotations, announcing that it is not in the market for business at the prevailing prices. For first quarter and first half we quote, f.o.b. Cleveland:

Bessemer.....	\$18.90
Northern Foundry, No. 1.....	\$17.50 to 18.00
Northern Foundry, No. 2.....	17.00 to 17.50
Northern Foundry, No. 3.....	16.50 to 17.00
Southern Foundry, No. 2.....	17.35 to 17.85
Gray Forge.....	16.40 to 16.90

Coke.—The slight activity in Foundry Coke a week ago has subsided. We quote Standard 72-hr. Foundry Coke at \$2.50 to \$2.60, at oven, for prompt shipment and for the first half. We quote Connellsville Furnace Coke at \$2 to \$2.15, at oven for first half. This price is shaded for prompt shipment.

Finished Iron and Steel.—The volume of new business and specifications on contracts continues to improve very slowly. While the aggregate tonnage that is being placed is still small, yet as compared with the volume of business a month ago the increase is very satisfactory. As a result of greater activity on the part of manufacturers in the metal trades there is an increase in the demand for all kinds of Finished Material, but consumers are buying only in small lots. They wait until they need the material and when they place an order they want quick delivery. Some fairly good orders for Iron Bars have been placed during the week, and good specifications for Steel Bars have come out. Practically no orders for material are coming from the railroads. The two local Bar Iron mills that started up last week are still running, but unless orders improve another shutdown will probably be necessary. The plant of the Otis Steel Company shut down last Saturday, but will start up again in a few days. Some cutting on Bar Iron is reported by Western mills, a price of 1.35c., Pittsburgh, being quoted. The established price of 1.40c., Pittsburgh, or 1.50c., Cleveland, is being maintained by the local mills. In Structural lines there is an inquiry out for 1400 tons of material for grade crossing elimination work that will be started soon by the city of Cleveland and the Baltimore & Ohio Railroad. Several specifications for 100 to 300 tons of Structural Material have been received by mills from local Structural shops during the week. The sale of a few carloads of Forging Billets is reported on the basis of \$30, Pittsburgh. There is still a good inquiry for Light Rails, and a number of sales in car lots have been made. The new price of \$28 for 25 to 45 lb. sections is being cut by the leading interest about \$1 a ton to meet the competition of the mills rerolling Rails, that are asking \$25 and \$26. We quote Steel Bars at 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼ in. and heavier, 1.80c., base, Cleveland. Mill prices on Sheets, carload lots, Cleveland, are as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers report a slight improvement in business. Warehouse prices are unchanged. We quote Steel Bars out of stock at 1.90c. to 1.95c., and Iron Bars at 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, No. 28, 4.05c. Warehouse prices on Boiler Tubes, 2½ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—Very little, if any, improvement is shown in the demand from consumers. Local mills are buying in very small lots for immediate needs and inquiries

from foundries are very scarce. There is a slightly better feeling in the Scrap market, however, and there is more activity among dealers. A little improvement is noted in the demand for Steel Scrap and, as a result of the covering by dealers who are short, Heavy Melting Steel is firmer. Quotations remain largely nominal. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$11.50 to \$12.00
Old Iron Rails.....	16.00 to 17.00
Steel Car Axles.....	17.00 to 18.00
Old Car Wheels.....	16.00 to 17.00
Relaying Rails, 50 lb. and over.....	25.50 to 26.00
Relaying Rails, under 50 lb.....	28.00 to 29.00
Heavy Melting Steel.....	12.00 to 12.50
Railroad Malleable.....	12.00 to 13.00
Agricultural Malleable.....	11.00 to 12.00
Light Bundled Sheet Scrap.....	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$16.00 to \$16.50
Cast Borings.....	4.50 to 5.00
Iron and Steel Turnings and Drillings.....	7.00 to 8.00
Steel Axle Turnings.....	7.50 to 8.00
No. 1 Busheling.....	11.00 to 12.00
No. 1 Railroad Wrought.....	11.00 to 12.00
No. 1 Cast.....	12.00 to 13.00
Stove Plate.....	10.50 to 11.00
Bundled Tin Scrap.....	9.00

New York.

NEW YORK, January 29, 1908.

Pig Iron.—Aside from one lot of upward of 1000 tons of Foundry Iron, of which the bulk went to a Western furnace interest, transactions have been limited to small lots. Buyers do not appear to have much confidence in the market and are holding back. We quote, at tidewater, \$18.75 to \$19 for No. 1 Northern Foundry; \$17.75 to \$18.25 for No. 2 Foundry; \$17.25 to \$17.50 for No. 2 Plain, and \$16.75 to \$17 for Gray Forge. Alabama Iron is quoted \$17.50 to \$18 for No. 1 Foundry, and \$17 to \$17.50 for No. 2 Foundry.

Steel Rails.—The rumor of new business placed by the Buffalo, Rochester & Pittsburgh Road, the tonnage being divided between Bessemer and Open Hearth Rails, lacks confirmation. The Central of New Jersey placed a portion of its tonnage recently, and the D. L. & W. has been mentioned as a buyer, though details are lacking. The Pennsylvania Steel Company has booked 1500 tons of girder rails for the New York City Railway receivers, this company also taking the 500 tons of T Rails placed by the Traction Development Company of Brooklyn.

Structural Material.—Projects for which the money has been available are not halted, apparently, and in New York City a number of buildings are coming forward, while others have reached the books of general contractors. The low prices at which work is being taken continue to be the subject of comment by unsuccessful bidders. On the bridge over the Cumberland River, at Nashville, Tenn., requiring 3500 tons, the American Bridge Company appears to be the low bidder. In New York City the National City Bank Building, 3100 tons, on the old Custom House site, goes to the receivers of Milliken Bros., Inc. The Spiro Building, on West Twenty-first street, a 12-story structure, requiring 1400 tons of Steel, was taken by the Hay Foundry & Machine Company. Included in work projected or on which bids have already gone in are the following: 600 tons for a dormitory and baggage room at Ellis Island, for which the New York State Contracting Company has the general contract; an 18-story office building, for the Improved Property-Holding Company, on Fifth avenue, north of Forty-second street, 600 tons; a 16-story loft building at Broadway and Fourth street, for Philip Braender, 1400 tons; the Sage Memorial Building, at the Troy Polytechnic Institute, 500 tons. The American Bridge Company has been awarded two bridge contracts of 500 tons each by the Nevada County Narrow Gauge Railroad in California and the Chicago, Burlington & Quincy Railroad. The New York Central is asking bids on the second instalment of its Grand Central terminal work, amounting to 6000 tons. The first section of this work, on which bids were taken some time ago, the amount being 4000 tons, has not yet been let. Structural mills are naturally running on light schedules, and the alternation of stopping for the accumulation of specifications and then starting up for brief runs continues. We quote as follows for deliveries at tidewater on mill shipments: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—A great deal of dissatisfaction exists over the recent developments in the Bar Iron trade. Manufacturers generally feel that a serious mistake from the standpoint of salesmanship has been made. The trouble originated in the West, and will probably have to be remedied there before a change for the better can be made in this section. It would not be surprising, however, if the leaders in the recent reduction of price should see a new light and decide to restore prices, at least to some extent. The reduced rates have brought out very little business, as under such circumstances as have recently prevailed buyers hold off, waiting until they

can satisfy themselves that bottom has been reached. The Eastern manufacturers generally quote 1.40c., Pittsburgh, or 1.56c., New York, but in some instances this price has been shaded. It is understood, however, that the business taken at very low prices usually carried good extras which would probably bring the actual realized price up to regular quotations. Steel Bars continue to be quoted at 1.60c., Pittsburgh, or 1.76c., tidewater.

Plates.—Business is spasmodic, sales agents reporting a fair run of orders on some days, and very quiet conditions on others. So far this year the orders placed have only been for small quantities. Prices are unchanged, as follows, at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—Inquiries are numerous, but they are usually for small lots, and only come from consumers having requirements which must be supplied early in the spring. Large buyers are so far not coming forward with their specifications for their season's requirements. Manufacturers are looking for a year of fairly satisfactory business, but foundries will be obliged to run on short time until nearer the opening of spring trade. Carload lots of 6 in. are quoted at \$26 to \$27 per net ton, tidewater.

Old Material.—Some demand is noted for Old Car Wheels, and the general foundry trade is also fairly good. Rolling mill business, however, is of exceedingly small proportions, although it is known that quite a number of mills are really bare of stock and must soon come into the market if they expect to turn out any considerable product. One Steel works is now in the market to purchase a considerable quantity of Melting Scrap, but is offering a price much below dealers' views. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting.....	\$8.00 to \$9.00
Heavy Melting Steel Scrap.....	8.00 to 9.00
Old Steel Rails, rerolling lengths.....	10.00 to 11.00
Relaying Rails.....	15.00 to 16.00
Old Iron Rails.....	13.00 to 14.00
Standard Hammered Iron Car Axles.....	15.50 to 16.50
Old Steel Car Axles.....	13.00 to 14.00
No. 1 Railroad Wrought.....	10.50 to 11.50
Iron Track Scrap.....	9.00 to 10.00
No. 1 Yard Wrought, long.....	10.00 to 10.50
No. 1 Yard Wrought, short.....	9.50 to 10.00
Light Iron.....	4.50 to 5.50
Cast Borings.....	4.00 to 5.00
Wrought Turnings.....	5.50 to 6.50
Wrought Pipe.....	8.00 to 8.50
Old Car Wheels.....	16.00 to 16.50
No. 1 Heavy Cast, broken up.....	12.50 to 13.00
Stove Plate.....	11.00 to 11.50
Grate Bars.....	8.50 to 9.00
Malleable Cast.....	12.00 to 12.50

Metal Market.

NEW YORK, January 29, 1908.

Pig Tin.—More business was transacted last week than during any preceding week in some months. On Tuesday the total sales aggregated at least 200 tons, largely for spot delivery. Prices are not materially unchanged from a week ago, although there was a sharp advance on Thursday and Friday. The drop on Monday, however, was probably caused by the anticipation of the Banca sale, which took place today and went off at 26.70c., c.i.f. New York. In all about 2600 tons were disposed of, a large amount for this sale. Those conversant with the situation voice the opinion that a large consumer was interested in having this sale go at a high figure. Prices during the week have been as follows:

	Cents
January 22.....	27.45
January 23.....	27.75
January 24.....	27.85
January 27.....	27.25 to 27.35
January 28.....	27.35 to 27.40
January 29.....	27.80

The increase in the business during the week has made it necessary to revise estimates of deliveries into consumption, and it is now believed that these will aggregate 1700 tons, which are 300 tons in excess of the possible arrivals. This will bring stocks in this country down to a record low figure. At the same time the visible supply all over the world is increasing. London holders of metal do not seem disposed to ship large amounts of metal, for the Minneapolis, due to arrive February 2, will bring but 250 tons. Cargoes of 1000 tons have not been uncommon in the past. Total arrivals are 1225 tons. If the St. George from Singapore reaches port Thursday the month's arrivals will be 1300 tons and the floats 900. The high price for spot to-day was caused by the small stocks here. The London market is higher than a week ago, at £124 5s. for spot and £125 for futures.

Copper.—The market in some ways is slightly easier. There have been enough resale lots of Lake offered at 13.87½c. to indicate that the 14c. price was not firmly held. Producers, however, continue to ask 14c. for both Lake and Electrolytic. It is probable, however, that a firm bid at 13.80c. for a lot of one or two carloads of Lake would be accepted by the holders who are reselling. There has been some inquiry for Electrolytic, but no business has developed.

It seems singular that the United Metal Selling Company should advance its price to 14.25c., which was done Tuesday, in the face of the weakness in Lake. All the Electrolytic needed can be had at 14c., and there is very little actual business, either domestic or foreign. Some of these resale lots are offered by consumers, and this lends color to the belief that these interests are not so bare of stocks as was generally supposed. Large users of Copper have declared recently they purchased all the metal needed for several months to come at under 13c. The export situation, which looked dubious a week ago, has improved considerably, the total outgo for the last week being over 9000 tons, which brings the exports for the first 28 days of the month up to 31,162 tons. Buying from Europe is practically at a standstill, as far as consumers are concerned, and speculators are not as anxious purchasers as a month ago. If the offering of Lake under producers' quotations continues, it will undoubtedly break the market. Prices in London are easier than a week ago, at £62 2s. 6d. for spot, and £62 15s. for futures. Best Selected is held at £63 10s. The price of Copper in London to-day is just half the price of Tin.

Pig Lead.—The market is dull and unchanged, with 3.75c. quoted in New York and 3.65c. in St. Louis. Early forward deliveries are held at the same figure, but far futures are unobtainable. Four weeks appears to be the limit for which producers are willing to make sales for future delivery.

Spelter.—The situation in Spelter is mixed. Offerings at low figures have been made, but on attempting to close the contract higher prices were demanded. The price in New York seems to be 4.70c., and the same figures are quoted in St. Louis. It is probable, however, that offers of 4.60c. at the Western point would be accepted.

Ferroalloys.—The price of Ferromanganese is slightly easier at \$47.50 to \$48.50, seaboard. This, however, is only obtainable for reasonably prompt shipment, dealers believing that conditions will materially improve in the near future. The old price of \$85 continues for 50 per cent. Ferrosilicon, both foreign and domestic. The higher grade, 75 per cent., commands \$127.50.

Antimony.—The large arrivals here continue to excite comment. Prices are unchanged at 9.50c. for Cookson's, 9c. for Hallett's and 8.50c. for Hungarian brands. The market is largely nominal.

Nickel.—The price is unchanged at 45c. for large lots and 50c. to 60c. for smaller quantities.

Tin Plates.—There has been considerable improvement in the demand, and a larger number of mills are in operation. Prices are unchanged, 100 lb. IC Coke Plates being held at \$3.89, f.o.b. New York, and \$3.70, f.o.b. Pittsburgh. The decline in Europe appears to have been arrested; prices in Swansea are unchanged at 11s. 7½d., in spite of large offerings of German Tin Plate Bars.

Old Metals.—A slight downward revision in the price of Brass Scrap is noted. The market continues dull, but some sales have been made at about the following figures, which represent dealers' selling prices for large lots:

	Cents.
Copper, Heavy Cut and Crucible.....	13.00 to 13.25
Copper, Heavy and Wire.....	12.50 to 13.00
Copper, Heavy and Bottoms.....	11.50 to 11.75
Brass, Heavy.....	10.00 to 10.25
Brass, Light.....	7.75 to 8.00
Heavy Machine Composition.....	12.00 to 12.50
Clean Brass Turnings.....	8.25 to 8.75
Composition Turnings.....	10.00 to 11.00
Lead, Heavy.....	3.50
Lead, Tea.....	3.25
Zinc Scrap.....	3.25

Iron and Industrial Stocks.

NEW YORK, January 29, 1908.

The market for securities is now believed to be uninfluenced by purely financial conditions. The supply of money is abundant, and from this time forward it is expected that values will be subject to the ordinary influences of trade conditions and business developments. The upward movement seems to have been checked, but prices appear to be fairly sustained. Even adverse occurrences, such as the passing of a local national bank into receivers' hands and the institution of a suit by the Government against the Union Pacific Railroad Company, proved to be without serious effect in depressing prices. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 27¼ to 29½, preferred 91¼ to 93; Car & Foundry common 29¼ to 30½, preferred 88½ to 89; Locomotive common 35¼ to 38, preferred 90 to 91; Steel Foundries common 5¼ to 6½, preferred 30¼ to 31; Cambria Steel 27¼ to 28½; Colorado Fuel 19¼ to 20½; Pressed Steel common 20½ to 21¼, preferred 77½ to 79; Railway Spring common 26 to 27½; Republic common 16¼ to 17½, preferred 69 to 69½; Sloss-Sheffield common 39½ to 40¼; Cast Iron Pipe common 19¼ to 19½, preferred 65½ to 69; Can common 5, preferred 49½ to 51½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 28, preferred 92, bonds 88½; Car & Foundry common 30¼, preferred 88½; Locomotive common 37¼, preferred 91; Colorado Fuel 20¼; Pressed

Steel common 21, preferred 78; Railway Spring common 25; Republic common 17, preferred 69; Sloss-Sheffield common 40¼; Cast Iron Pipe common 19½, preferred 67; Can common 5, preferred 50.

Dividends.—The Pressed Steel Car Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable February 26.

The J. G. Brill Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable February 1, and 1 per cent. on the common stock, payable March 14.

The Westinghouse Air Brake Company, Ltd., of London, England, has paid a dividend of 10 per cent. for the six months ended December 31, 1907, and an extra dividend of 5 per cent. for last year.

The United States Steel Corporation has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable February 29, and ½ per cent. on the common stock, payable March 30.

Factory Mutual Fire Insurance.

A correspondent calls attention as follows to a bill introduced in the New York Legislature which should be opposed by manufacturers interested in mutual fire insurance companies:

"Assembly bill, No. 42, dated January 6, 1908, which has been referred to the Committee on Insurance in the New York State Assembly, is another attempt to tax factory mutual fire insurance companies for the benefit of certain firemen's associations. Similar bills have been before the Legislature for several years, but have been defeated each time by the energetic opposition of policyholders. Because factory mutual companies confine their business to isolated properties and employ restrictions and inspections of the most rigid character, their losses are small, and they are able to return to policyholders dividends averaging something more than 90 per cent. of the total premiums. If this bill becomes a law, and a tax of 1 per cent. on gross premiums is imposed, it will be equivalent to 20 per cent. on the net premiums."

The 1908 Meeting of the Testing Society.—The next annual meeting of the American Society for Testing Materials will be held at the Hotel Traymore, Atlantic City, N. J., June 23-27, 1908. With five days devoted to the meeting, instead of three, as heretofore, there will be no conflict of the sessions of different sections, and the arrangement of the programme will probably be such that a member interested in but one line of the convention's work can attend all the sessions devoted to his group of subjects in two or three consecutive days.

The ninety-fourth meeting of the American Institute of Mining Engineers will be held in New York City, beginning Thursday evening, February 18. The Institute headquarters will be in the foyer of the United Engineering Society Building during Wednesday and Thursday. At the opening session on Tuesday evening an illustrated paper on "Electric Power in Steel Mills" will be presented by David B. Rushmore, Schenectady, N. Y. The Wednesday morning session will be devoted to the "Physics of Steel"—a topic which has been the subject of many fruitful discussions at previous meetings of the Institute. On this occasion it will be considered specially with regard to the structure of steel ingots and their mechanical treatment, as related to the character of finished products, such as forgings, rails, beams, &c. The proceedings of this session will include, besides the continued discussion of Prof. H. M. Howe's paper on "Piping and Segregation in Steel Ingots" and such other pertinent contributions as may be offered, an important paper by James E. Howard, engineer in charge of the testing department at Watertown Arsenal, Watertown, Mass., on the work of that department, and its bearing upon the metallurgical questions involved therein. At other sessions a number of papers of interest to iron and steel manufacturers will be presented.

Correction.—In the article relating to the New York and New Jersey Metal Trades Association on page 283 of our last issue, the name "Slocum & Chase Company" was incorrect. It should have been "Sloan & Chace Mfg. Company." This company manufactures precision machinery, having its plant at Newark, N. J.

Interstate Commerce Commission Decisions.

Maintenance of Rate Reduced after Complaint Filed.—On December 2 it was decided that when a rate is reduced after answer has been made and before hearing, the report disposing of the proceeding shall carry with it an order directing the defendant to maintain that rate as a maximum for not less than two years. On December 6 it was decided that orders in special reparation cases shall include a clause providing that the new rate or regulation upon the basis of which reparation is granted shall be maintained for a period of at least one year. It is now agreed that the two years so required in orders upon formal complaints and the one year in orders in special reparation cases shall run from the date of the order and not from the date when the reduced rate or new regulation became effective.

Delivering Carrier Must Investigate Rate Situation Before Paying Claims.—A delivering carrier cannot accept the authority of a connecting line and thus shield itself from responsibility in paying claims, but must investigate and ascertain the lawful rates and allow the claims or not upon the basis of its own investigations.

Delivering Carrier Must Collect Undercharge.—Even though an undercharge results from an error in billing by the initial carrier or a connection, the delivering carrier must collect the undercharge. In all such cases the legal expense attending its efforts to collect undercharges would seem to be a valid claim against the carrier through whose fault the mistake was made.

Special Understandings Between Shippers and Carriers not Published in Their Tariffs of No Valid Effect.—A shipper at an industrial point had an understanding with the agents of carriers that when he delivered shipments to them consigned to stations at which there were no agents the carriers would so advise him and hold the shipments for further direction. In a given case a carrier neglected to advise him and to hold the shipment, but billed it and sent it forward to a nonagency station as a prepaid shipment. Held, that the shipper must pay the charges and that no understanding of that nature not incorporated in the published tariffs of the carrier will operate to relieve the carrier from the duty of collecting the lawful charges.

Free Carriage of Company Material.—It is not unlawful for a carrier to return its own property free of charges to the manufacturers thereof situated on its own line for exchange or repair.

Through Rate is the Lawful Rate; Combination Rate in Absence of Through Rate.—A through rate from point of origin to destination of a shipment is the lawful rate applicable to that shipment whether the rate be confined to the line of one carrier or be a joint rate applying over the lines of two or more carriers. In the absence of a through rate from point of origin to point of destination of a shipment, the lowest combination of rates applicable via the route over which the shipment moves is the lawful rate for that shipment, except that proportional rates applicable to through shipments or to shipments from or to "beyond" must be used in preference to locals or other rates which may be higher or lower than such proportionals. The proportionals being specifically applicable to through shipments must be used in making up the rates for such shipments on the same principle that the through rate is the lawful rate regardless of lower combination.

Refund of Drayage Charges Caused by Misrouting.—Where a shipment was routed contrary to the express directions of the shipper and the consignee was compelled to move the shipment by dray from the station of that carrier to the destination to which it would have been delivered if properly routed, the carrier may, under the particular circumstances of the case, be authorized by the commission to refund to the shipper the reasonable cost of the drayage.

The Bessemer steel plant of the Wheeling Steel & Iron Company at Wheeling, W. Va., which has been idle for some time, is scheduled to start this week. The company's plate and pipe mills are expected to start next week.

Trade Publications.

Variable Speed Motors.—Northern Electrical Mfg. Company, Madison, Wis. Booklet No. 54. Title, "Some Facts About the Single Voltage Variable Speed System." Claims that this company was the pioneer in building variable speed motors for shunt field control and single voltage when it put out the first one five years ago. Deals with the advantages of the system and its demonstrated success. Illustrations show variable speed motors applied to various machine tools.

Centrifugal Pumps.—American Well Works, Aurora, Ill. Bulletin No. 104. Title, "Modern Practice in American Centrifugal Pump Construction." Describes and explains the centrifugal pump built by this company, which is not a sand pump, but is suitable for farm irrigation, drainage, brewery work, fire pumps for municipal plants and many other places where water is to be elevated.

Power Specialties.—Williams Gauge Company, Pittsburgh, Pa. Pamphlet. Pertains to Williams' auxiliary feed water regulator with safety water column, steam pump governor, steam trap, rotating regrinding gauge cocks and Success automatic water gauge.

Rail Anchors.—Railway Specialty & Supply Company, Chicago, Ill. Bulletin T-1607. Refers to the P. & M. rail anchor, which is claimed to offer the strongest combination of simplicity and efficiency.

Oil Burning Furnaces and Equipment.—W. N. Best American Calorific Company, 11 Broadway, New York City. Catalogue. Size 6 x 9 in.; pages 29. Deals with the company's Calorex oil burning furnaces and equipment, giving illustrations, specifications and descriptions of various types of forge furnaces, bolt and rivet making furnaces, bolt heading furnaces, brazing furnaces, flue welding furnaces and portable furnaces. Calorex burners and oil regulating cocks are referred to separately.

Refrigerating Machinery.—Larson-Baker Ice Machine Company, 1901 Nicholas street, Omaha, Neb. Catalogue. Size 6 x 9 in.; pages 52. Illustrates and describes Larsen ice-making and refrigerating machinery of steam, motor and belt driven types. The advantages of single-acting compressors, and the economy and efficiency of high speed ammonia compressors are set forth. Descriptive matter and diagrams are given of creamery, confectioners', retail butchers', brewery and packing house refrigerating and cooling plants, and an ice-making plant. Useful tables on the subject are included.

Lathes.—Fitchburg Machine Works, Fitchburg, Mass. 1908 catalogue. Size 6 x 9 in.; pages 40. Gives an illustrated description of the company's standard Lo-swing lathe, which will take work from ½ to 3½ in. in diameter and up to 60 in. long, and is claimed to produce rapid, economical and accurate work within its working range. Attention is drawn to those features which give extreme rigidity to the operating parts and ease and accuracy of control under heavy loads. Instructions which relate mainly to details of erecting and caring for the lathe are appended. This lathe was illustrated and described in *The Iron Age*, September 5, 1907.

Punches, Shears and Bending Rolls.—Hilles & Jones Company, Wilmington, Del. Catalogue T. Size 9 x 9 in.; pages 28. Contains illustrations with brief descriptive notes of various styles and combinations of machine tools for working plates, bars and structural shapes; the line including those for punching, coping, shearing, beveling, clipping, straightening, bending and planing.

Water Heaters.—Harrison Safety Boiler Works, Columbia Station, Philadelphia, Pa. Folder entitled "A Brief About Hot Water." Relates particularly to the use of hot water in textile establishments and to its heating by exhaust steam in the Cochran open feed water heater, which combines the additional functions of a return tank, expansion or muffle tank, oil separator, steam trap, hot well, &c. Also draws attention to the value of the hot process system of water purification for softening hard water which is to be used for dyeing and washing purposes, and for boiler feeding.

Staybolts.—Flannery Bolt Company, 308 Frick Building, Pittsburgh, Pa. Circular. Shows an installation of the Tate flexible staybolt, and contains a testimonial from one of the company's first customers. The bolts are claimed to be now in service on over 90 railroads.

Exhaust Fans.—Emerson Electric Mfg. Company, St. Louis, Mo. Bulletin No. 3504, superseding No. 3503. Gives illustrations, descriptions and specification tables of 12, 18 and 24 in. Davidson blade, and 12 and 18 in. Parker blade Emerson electric exhaust fans for alternating and direct currents.

Locomotive Cranes.—Brown Hoisting Machinery Company, Cleveland, Ohio. Catalogue L. Pertains to Brownhoist locomotive grab-bucket cranes, which afford a simple and efficient means of handling ore, coal, limestone, slag, sand, &c. Views are given of the cranes handling ore from stock piles, gondola cars, &c., and suggest the possibilities attending the use of the equipment. Several testimonial letters and a partial list of iron and steel companies using Brownhoist locomotive cranes are appended.

The Machinery Trade.

NEW YORK, January 29, 1908.

The demand for machinery was exceedingly light the past week, and with many houses the amount of business transacted showed a perceptible shrinkage from that of the previous week. A few weeks ago business became more active, and it was thought at that time an impetus had been given trade that meant a gradual improvement, but this expected increase has not developed. On the contrary, orders appear to have become scarcer and the volume of inquiries has fallen off. Aside from the operations of the Standard Oil Company at Bayway, N. J., and the Delaware, Lackawanna & Western Railroad at Scranton, Pa., the carrying out of no large project, requiring the purchase of a considerable amount of machine tools, has come to light. From a reliable source we learn that the Standard Oil Company intends to proceed with construction work rather slowly, and that it will probably be some weeks before the list of tools noted in these columns last week will be closed. Reports from manufacturers who have recently visited their agents in this territory are to the effect that business in other sections of the country is not greater in volume than it is here. Prices on machine tools continue to be maintained by the important manufacturers, and such reductions as have been made have been made by the less important companies.

A joint meeting of the committees appointed from the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association was held at the Jefferson Hotel, Richmond, Va., January 24, to formulate a programme for the joint annual convention of the three associations, to be held in Richmond May 13, 14 and 15. The programme mapped out has many radical departures from the previous meetings held, either jointly or separately, by the organizations, and is expected to eliminate the objectionable features attending the work of previous large conventions. The complete programme will be ready for publication early in April, and will be sent to all members of the three associations fully a month before the convention. Matters of vital importance to the trade will be discussed at both the executive sessions of each association, and the joint sessions of the three organizations, and speakers of national reputation will make addresses on important topics. The interest shown in the coming convention is manifested by the large number of reservations already made for rooms in the Jefferson Hotel, where the convention will be held. The committees which met to arrange the programme are as follows: *American Supply and Machinery Manufacturers' Association*—M. W. Mix, Dodge Mfg. Company, Mishawaka, Ind.; E. H. Hargrave, Cincinnati Tool Company, Cincinnati, Ohio; C. F. Aaron, New York Leather Belting Company, New York; F. A. Hall, Yale & Towne Mfg. Company, New York; D. K. Swartwout, Ohio Blower Company, Cleveland, Ohio; W. M. Hood, Lunkenheimer Company, Cincinnati, Ohio; F. D. Mitchell, secretary-treasurer, New York. *National Supply and Machinery Dealers' Association*—George Puchta, Queen City Supply Company, Cincinnati, Ohio; A. T. Anderson, secretary-treasurer, Cleveland, Ohio. *Southern Supply and Machinery Dealers' Association*—J. C. Miller, Miller Supply Company, Huntington, W. Va.; Alvin M. Smith, Smith-Courtney Company, Richmond, Va.; Hunter B. Frischkorn, Hunter B. Frischkorn, Richmond, Va.; Levin Joynes, Southern Railway Supply Company, Richmond, Va.

A movement has been started in Birmingham, Ala., by a number of machinery and iron manufacturers to form a local organization, and with this end in view a meeting of prominent manufacturers is understood to have been held. It is reported that those at the meeting were of the opinion that the association should be formed, and it is said that another meeting will be held shortly at which it is expected a permanent organization will be formed.

J. F. Blanchard & Co., manufacturers of interior fire-proofing equipment, who recently built a plant at Border and Review avenues, Long Island City, L. I., are preparing a list of machinery equipment which will include rolling mill equipment and sheet metal working machinery. The plant covers about $\frac{1}{2}$ acre of ground and consists of one and two story structures, and the machinery requirements will be quite extensive. It is said in the trade that the company expects to spend over \$10,000.

The National Paper Milk Bottle Company, Pottsdam, N. Y., has inquiries in the trade for special machinery for manufacturing paper milk bottles and paper disks to be used as stoppers.

The New Haven Machine Screw Company, New Haven, Conn., is in the market for automatic screw machines and hand milling machines. The company is experiencing a good demand for its hexagon, flister or round head cap screws, collar and shoulder screws, &c. It has recently added to its working force and is running its plant 60 hr. per week.

The Southern Power Company, Charlotte, N. C., has

been so busy on plans for developing its water power that it has not progressed very rapidly with the plans for its new steam plant. Within the next three or four months, however, the company expects to have plans ready for a 50,000-hp. steam or producer gas plant, the first installation to consist of two 6000-kw. units. This first installation is to supplement the present 75,000 hp. in water powers. The complete installation of the 50,000 hp. is to supplement at low water the additional 100,000 hp. which the company expects to develop within the next few years. W. S. Lee is chief engineer, but communications relative to the steam plant should be addressed to J. W. Fraser, assistant chief engineer.

F. & J. Meyer, 116 Broadway, New York, export merchants, have opened a Mexican office which is under the management of Mauricio Philippe, who has had a wide experience in that country in the machinery and hardware lines. It is the intention of the firm to make a specialty of the introduction and sale of hardware, machinery, tools and supplies in Mexico, and it desires to secure the agency for manufacturers of these lines for that territory.

Chicago Machinery Market.

CHICAGO, ILL., January 28, 1908.

While in some lines of machinery a little better trade has developed within the past week, there has, on the whole, been no notable improvement. Desultory orders continue to come in, but they include no requirements for extensive equipment. Inquiries, however, are growing more numerous, and they are of a nature that give promise of concrete results at an early date. Considering the large number of manufacturing enterprises that were in contemplation during the first half of last year, and which were arrested by adverse financial conditions, it seems but reasonable to expect the revival of many of these projects now that money is becoming easier. Nearly all of these undertakings involved machinery requirements of greater or less extent, and, being basically sound, many of them will doubtless be revived as conditions continue to improve. The fact that railroads, while limiting their purchases in every direction to absolute necessities, are coming more and more frequently into the market for odd tools here and there, would indicate the existence of more extended requirements which under ordinary circumstances would be supplied. Machinery dealers are, therefore, watching developments in this direction with unusual interest, since it is felt that when they again come into the market a great impetus will be given to trade. Inquiries for mining machinery continue to develop, and the outlook for business in the spring is most encouraging. Active preparations are under way in the West for the development of new prospects, and many established mines are contemplating the installation of additional equipment. Notwithstanding the present quietness, there is among machinery dealers generally no abatement of the optimistic feeling regarding the prospects for a reasonably good demand in the near future.

Plans have been made and work begun on a two-story foundry and machine shop to be erected by the Olympic Foundry Company, 2002 A street, Tacoma, Wash. The plant will comprise a foundry, 50 x 80 ft.; pattern shop, 50 x 55 ft.; machine shop, 50 x 55 ft. The foundry will be equipped with one 5-ton and one 20-ton cupola, and a 15-ton electric traveling crane.

The Turner Tool Company and the Universal Tool Company, who suffered a loss from fire on December 25 of last year, at their former location, 215 South Clinton street, Chicago, have moved to 176 South Clinton street, which quarters they jointly occupy.

Plans have been prepared for extensive additions and improvements to the plant of the Spencer Light & Water Works, municipal plant, Spencer, Iowa, which involve the purchase of considerable equipment. The city is now in the market for one alternator of 120 kw., 60-cycle, 3-phase, revolving field, 2300 volts, belt driven, about 550 rev. per min. with exciter and rheostat; one alternator about 50 kw. of the same type, of 2300 volts, belt driven to about 800 rev. per min., with exciter and rheostats. Bids will also be taken on the same equipment with direct connection, engine running at about 250 rev. per min., for the belt driven equipment. A Corliss engine of about 70 hp. will be considered, and for direct connection a high speed engine of the same capacity. One 150-hp. open feed water heater; two boiler feed pumps, one with capacity of 1250 gal. and the other 3100 gal. per hour, the two pumps being preferably coupled, so that both can be driven together either by gear, belt or direct connection to motor or single cylinder steam engine. The Purchasing Committee has also under consideration the installation of a gas producer equipment of from 80 to 100 hp. The plant is managed by R. L. Taylor, with R. T. Turner superintendent.

Geo. F. Halverson, Madison, Wis., has been appointed general sales agent of the Northwestern Steel & Iron Company of Eau Claire, Wis., manufacturer of farm machinery, gasoline engines and concrete machinery.

The Lockport Boiler & Iron Works, Lockport, Ill., re-

cently organized to manufacture steam boilers, heaters, heavy forgings, steam shovel dippers and sheet metal work, contemplates the erection of a new building, work upon which will be begun in the near future. The company is already established in temporary quarters, and has installed equipment which includes steam hammer, overhead drill, lathe and a pair of heavy rolls built in its own shop. An order has been placed with I. N. Phillips Company, Chicago, for a New Doty punch and shear. The officers of the company are: A. L. Saines, president; A. L. Smith, vice-president and general manager; John G. Beck, secretary and treasurer.

New England Machinery Market.

WORCESTER, MASS., January 28, 1908.

Business is improving in those lines of metal industry that are nearest the retailer and the consumer, and the change extends to a certain extent to the other end of the list, the machine tools. Inquiry of a miscellaneous list of manufacturers indicates the accuracy of this statement. The makers of fire arms, razors and other lines of cutlery, machine brushes and miscellaneous metal goods afford the general information that there is a marked accession of orders, not always in a big way, but satisfactory, all things considered. By comparison with December, practically all products are in greater demand, though this statement cannot be considered a strong one, owing to the fact that December was almost flat everywhere and with everybody. The comparison that counts is with the early weeks of January, and on this basis a change for the better has been noted in many lines of manufacturing.

The experience of machinery dealers varies. Some of them are having a nice little spurt of orders for small lots. Others have not been so fortunate. Yet the experience of every dealer in Boston indicates to him that an improvement must be felt in the near future. Inquiries in such considerable numbers can have no other meaning to them. Their reports from machine tool builders whom they represent have been optimistic in some cases, though it must be said that this is not always the case, certain lines not having responded to the slight reaction as well as others. Reports from branches of machinery houses in some other cities are that business has revived with them to a greater extent than in the New England territory. Cancellations have entirely ceased, and occasional instances are reported of orders booked for machinery which had previously been canceled.

The situation is not one easy of analysis in the machinery trade. Experiences are so conflicting that only a very general idea is possible. It is the same to a certain extent in other lines of metal manufacturing. Simultaneously with such published announcements as that of the American Locomotive Company that it will shut down its plant at Providence, R. I., comes pleasanter news like that from Bristol, Conn., that the New Departure Mfg. Company, which makes a large variety of high-class specialties, has gone to a 13-hr. a day schedule in some departments, and is working day and night in the two other departments one of which, the automatic department, has been running day and night for practically three years. European and domestic orders have made this increased production necessary. The Coe Brass Mfg. Company, Torrington, Conn., one of the constituent parts of the American Brass Company, has gone on an 8-hr. day, six days a week, because of increasing business.

The Bath Grinder Company, Fitchburg, Mass., has received a good order for its grinding machines from Japan, together with new domestic orders, and continues to operate on full time with full working force.

Hill, Clarke & Co., Inc., Boston, had their annual gathering of representatives at the Exchange Club, Boston, January 25. All the branch offices were represented, and there were also present as guests a number of New England machine tool builders with whom the house has business connections. In their invitations was included the request that they address the gathering on the best methods of selling their machinery during dull times, and the several hours of after dinner speaking were consequently of unusual interest, as well as a source of mutually valuable education.

Boston is holding its first National Motor Boat and Engine Show in the Mechanics' Building, this week. There is a large number of exhibits, including many of the standard gasoline engines and motor boats, and their various accessories. No machinery is shown, though small tools are included in some of the general exhibits of the dealers. It is the expectation of the management to make of the show an annual fixture, and it is hoped that with so favorable a beginning another year will see represented the tools with which engines and boats are built.

The manufacturers of motor boats and their engines and other equipment state that they have not seriously felt the business depression. Buying continues brisk, and the crowds of visitors at the Boston show would seem to indicate that more business is in sight. The yacht builders have a good deal of work to do now, though the season opened poorly.

The Herrshoffs of Bristol, R. I., who have been running on short time, have resumed full operation because of new orders. There is considerable demand for power boat machinery for commercial purposes, including fishing craft of many kinds.

The Ajax Mfg. Company, recently organized at Waterbury, Conn., under the laws of that State, will engage in the manufacture of what is known as a machine for clearing metal bars, intended to perform the functions and to replace the old so-called scratching machine. It is claimed for the device that it will result in a large saving in labor and material, as compared to older methods. The company is now having estimates for the manufacture of its machine submitted by local shops. M. J. Byrne, 36 North Main street, Waterbury, is secretary of the company. J. S. Neagle, Waterbury, is also on the board of officers.

It is announced that the Marlboro Electric Machine & Lamp Company, Marlboro, Mass., will remove its business to Central Fall, R. I., because of the inability to secure an adequate amount of female help at Marlboro.

The Waterbury Wire Die Company, Waterbury, Conn., manufacturer of dies for drawing all kinds of wire, has increased its capital stock from \$5000 to \$25,000. The company has been in existence for about 10 years, during which time the business has so increased that the new capital has become necessary. The new stock was all subscribed for by the original stockholders. The company states that it is not in the market for new equipment.

The Spencer Wire Company, Worcester, Mass., has established a department for the manufacture of music wire in full standard line. The department is located at the Worcester works of the company, where manufacturing has already begun.

The American Writing Paper Company is planning the establishment of a new power plant at Holyoke, Mass., to cost \$100,000. The purpose is to supply power to five of the company's large factories in that city, though only three plants will be included at first. The company states that it has made no definite plans for the new power plant, excepting that it will be all steam and will eventually develop from 3000 to 4000 hp.

A dispatch from Quincy, Mass., states that the Fore River Shipbuilding Company has been awarded the contract for building three submarine torpedo boats of the Holland type for the Austrian Government. The material for the boats is on the ground, and the work of assembling the hulls will begin immediately. They will be similar to the Octopus class of American submarines, and will be 105 ft. over all, equipped with two 250-hp. electric engines designed to give a speed of 10 knots submerged. They will have a steaming radius of 1000 miles.

Another submarine contract for New England is that awarded the Lake Torpedo Boat Company, Bridgeport, Conn., by the United States Navy Department for one boat which shall be accepted if it comes up to the Octopus type in efficiency. A portion of the appropriation for submarines was reserved with the idea of giving a boat of another class a chance to remain in the field of competition, and the Lake Company will benefit by the provision.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 28, 1908.

While there exists among the heads of departments of all large tool manufacturing and other machinery concerns a very commendable form of optimistic expression, which is apt to be mistaken as indicating actual improvement in business, it can be said that in certain lines the improvement is real. Manufacturers of smaller tools, such as electrical drills, grinders and the like, report their establishments, for the most part, running full time and with full forces. In several of the larger plants making specialties of planers, shapers, upright drills and lathes, the time has been increased a little, expert machinists have been re-engaged, and gradually the routine of normal shop discipline restored.

Manufacturers of power equipment are interested in the reports that several large projects outlined for early building when the slump came on are now being revived and will be pushed to completion. One of these is the large building to be erected at Vine and Seventh streets for the Provident Savings Bank & Trust Company. Another is that which contemplates the erection by local capitalists of two large power buildings, one to contain 350,000 and the other 450,000 sq. ft. of floor space, and each to be built in extreme business centers of the city. Arrangements are progressing through the agency of Nicholas P. Smith & Bros., in the Mercantile Library Building. Both buildings will be of concrete.

Machinery salesmen and local dealers report better inquiry, but there is as yet but little buying. The preponderance of inquiry is of a feeling nature. Inquirers, anticipating reductions in prices, are watching for a drop which as yet has not materialized. There is as yet no evidence of cutting in this market, and prices are, so far as can be learned, being rigidly adhered to.

At the annual meeting of the I. & E. Greenwald Company during the week Henry Burkhold was elected president; Alex S. Cunninghame, vice-president, and W. B. George, secretary and treasurer. Ezra G. Greenwald, who retires from the presidency, will become the Eastern representative of the company, with offices in New York. On the new Board of Directors which was increased from five to seven members are: Henry Burkhold, Tom Greenwald, Edward J. Dempsey, George Schott, Alex S. Cunninghame and W. B. George. Arrangements are already under way to expand the business and enlarge the capacity. The Greenwald plant has long been known in the field of engine builders, and is one of the oldest, if not the oldest in the city, making a specialty of that line.

John Meinhardt, a local engraver, has purchased the plant at 2129 Barnard street, which includes a two-story brick factory building, one-story blacksmith shop and lot, 25 x 100 ft., and will install the necessary machinery for a model small brass foundry.

About 20 sheet iron and tin plate men, representatives of the Fave Trough and Conductor Pipe Association, all manufacturers, met at the Hotel Sinton, January 22, to discuss conditions of the trade. H. H. Bishop of Cleveland presided as secretary. It was announced that nothing developed at the meeting that would be of interest at this time. The visitors were given a complimentary dinner at the Business Men's Club in the evening by W. T. Shannon, local representative of the American Sheet & Tin Plate Company.

A very interesting lecture, illustrated with the aid of the stereopticon, was given Saturday night at the Palace Hotel by E. H. Mumford of Philadelphia before members and guests of the Cincinnati Section, Associated Foundry Foremen. Mr. Mumford's subject was "Universal System of Machine Molding."

Local jobbing foundries are slowly but surely regaining lost ground of the late year, and while none expect to see any part of 1908 as busy as the earlier and middle portion of 1907, yet hope to have a steady and profitable melt. Machine tool manufacturers are renewing contracts on the sliding scale basis, and with but slight if any changes from the forms of last year; the proposed uniform contract having been waived, or at least dropped for the time being, as being impracticable at this time.

The largest of the local jobbing foundries is now running three days a week and with a melt of about 70 tons. This is about the average. There are some foundries making small castings for novelty works or smaller machinery that have seen but little change in the situation and have maintained a steady run during the depression.

The Vulcan Supply Company is a new enterprise, an outgrowth of the Vulcan Copper Works Company of Cincinnati, with Frank L. Carter, formerly of the Queen City Supply Company, as manager. Catalogues and other information interesting to that business are requested from manufacturers. The five-story building at 120-122 Sycamore street is devoted to the business, which is that of handling mill, factory, mine, contractors' and railroad supplies. The Vulcan Copper Works Company is an old one, and has long been known in the line of building copper apparatus for distilleries and chemical plants.

At the annual meeting of the Smith & Mills Company, held January 22, the old officers were re-elected as follows: Albert S. Smith, president and treasurer; James Mills, vice-president and general manager; James E. Mills, secretary; Ernest Mills, superintendent and manager. The company is a close corporation. Some improvements have been recently completed, conspicuous among which was the fitting up of an annex on the south of the plant for the installation of the planers. The plant is now running on 45 hours' time, with a force of about two-thirds that maintained the greater part of last year.

The Buckeye Pump & Mfg. Company, Columbus, Ohio, which is now installed in its new plant in West Broad street, is running full time and with a large force, and its officials are hopeful of as large or larger business than that of 1907.

It is reported that a company contemplating the location of a large factory for the manufacture of horse shoes is negotiating for the old plant of the Shelby Steel Tube Company on Dorr street, Toledo, Ohio.

Cleveland Machinery Market.

CLEVELAND, OHIO, January 28, 1908.

While general conditions in this city continue to improve slowly, the situation as regards the machine tool market remains practically stationary. In fact, the past week has, if anything, been a little quieter than earlier in the month, when there was more of a demand for single tools. A few sales of small single tools were made during the week, but inquiries are still scarce, and dealers expect that business will be light with them for several weeks to come. The sales and inquiries at present are practically limited to small industrial plants and machine shops.

Among local plants engaged in the manufacture of iron

and steel products the situation is daily growing better. While orders are not yet numerous, they show some improvement, and inquiries are a great deal better, indicating a better volume of business in the near future. Some builders of machine tools and machinery are running their plants now at full capacity, and there are very few, if any, that are not running on at least one-half their full capacity. That industrial activity is gradually being resumed is shown by the fact that local manufacturers who are members of the Cleveland Branch of the National Metal Trades Association are altogether putting on from 25 to 30 additional workmen a day, this number representing a net increase, as none are being discharged. Besides employing additional men, a number of plants are employing their old men longer hours than they were a few weeks ago.

A number of local brass plants engaged in the manufacture of plumbers' goods report a decided improvement in the volume of their orders during the past two weeks. Makers of farm tools, who were seriously affected by the industrial depression, are again getting a fair volume of business, orders having improved materially with them, except from the South, where the hesitancy in placing orders indicates that confidence has not yet been fully restored.

Business conditions among builders of heavy machinery and of coal and ore handling plants as yet show little improvement, but it is expected that work will be ordered resumed soon on some large contracts that were held up because of the recent financial stringency.

The Cleveland Punch & Shear Works Company has just received an order from the Standard Oil Company for the entire equipment of machinery for the fabrication of plates and structural shapes at its plant at Elizabeth, N. J. The order is for 10 machines, including punches, shears, rolls, drills, &c. This company has not yet caught up on orders that it received last September. During the past three months it has been running its machine department at full capacity, with the exception of only a few days, when the working time was reduced from 10 to 8 hr. In its punch and die department the company reports that orders are coming in as numerous as ever.

The Brown Hoisting Machinery Company has just received a contract from the Astoria Gas Light & Power Company, New York, for a large coal handling plant. Work on the contract will be started at once. The company is greatly encouraged over the outlook, having received information that work will probably be ordered started soon on some large contracts which it took a few months ago, but which were held up at the time of the financial depression.

The Radio Furnace Company, which was incorporated in Youngstown, Ohio, a short time ago with a capitalization of \$100,000, has effected its organization by the election of M. J. Murdock as president; M. M. McGowan, vice-president; E. S. Hilsop, secretary, and Harry Black, treasurer. The company will build a plant to manufacture a furnace invented by M. J. Murdock. The company is looking for a site. It may decide to locate in Warren, Ohio.

The plant of the Thew Automatic Shovel Company, Lorain, Ohio, builder of steam shovels, has kept running at full capacity during the recent industrial depression. The company was well loaded up with orders when the slump came in the fall, and with these and the new business that has come in the company has been able to avoid the necessity of any curtailment in the operation of its plant.

At the annual meeting of the XX Century Heating & Ventilating Company, Akron, Ohio, held recently, John Kerch was elected president; George Maag, vice-president, and P. T. McGuckian, secretary and treasurer. According to the annual report of the treasurer the past year was the most successful in the history of the company.

The Elyria Iron & Steel Company, Elyria, Ohio, is now running its plant at full capacity three days a week. The company reports considerable improvement in inquiries during the present month, and hopes soon to have its plant running on full time.

The Standard Tool Company reports a considerable improvement in orders during the past few days. The company's plant is now running at full capacity.

Foot, Burt & Co., builders of single and multiple spindle drills and bolt cutters, report that they did not receive a single cancellation of an order during the recent depression. Inquiries are improving and their plant is now running five days a week with reduced force.

The city of Cleveland, through W. J. Springborn, president of the Board of Public Service, will receive bids on February 6 for two combination steam and hot air rotary dryers and one rotary steam jacketed percolator for installation in the municipal garbage disposal plant.

At the recent annual meeting of the John F. Byers Machine Company, Ravenna, Ohio, W. S. Krake was re-elected president; Marvin Collins, secretary and treasurer, and I. L. Collins, superintendent. Additions to the company's plant are now nearing completion.

The Illinois Steel Company has just awarded to John W. Seaver, consulting and contracting engineer, Cleveland, the contract for furnishing for the new coke oven plant which it is now erecting at Joliet, three of Mr. Seaver's latest de-

sign of combination coke pushers and coal levelers. These machines are of exceptionally heavy and powerful design, and will embrace several entirely new features in their construction.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 28, 1908.

The volume of business for machinery and tools, as noted during the past few weeks, about holds its own, but it is difficult to find any increase in the amount of new business coming out. Prospective buyers show no inclination to close up pending propositions, and there is practically nothing at all being offered in the way of new plant equipment. The financial situation shows a decided improvement. The machinery trade, however, is slow to respond, a condition no doubt due to the unsettled state of general business. Industrial plants, particularly those dependent on the railroads for their business, are extremely dull, and have curtailed working forces almost to the minimum. The railroads are practically out of the market. A few inquiries which developed from this source recently have not as yet reached the order stage, and with the decreased traffic which they are reporting not much hope is expressed for an early resumption of buying on their part.

Practically all of the business placed recently has been for single tools. Dealers report sales as irregular and confined largely to the smaller class of equipment. Occasionally the sale of a medium sized lathe, a planer, or a drill press is made, but these are, as a rule, pretty well scattered. Manufacturers do not take on many new orders, and plants, as a rule, are being operated on short time. Efforts are being made to keep the full number of employees at work, and, in order to do this some plants are working alternate shifts, so that at least some time is made by all the employees. The Baldwin Locomotive Works is making further reductions in working hours, and in some departments not much over three days a week are being made. Others, however, are still on four and five days per week, at 8 hr. per day.

Wage reductions are not being heard of to any material extent; particularly because there is but little work to be done, and what little comes in is usually taken at a fair price. Machine tool prices hold fairly well, even in the face of strong competition. The standard tools are not being reduced in price, although it is reported that slight reductions, particularly on the part of some dealers, have been unofficially made on some of the medium and lower grades of tools in order to secure business.

The market for second-hand tools shows a little improvement. Here and there sales have been made of some few tools. Woodworking machinery has been in better demand, but in the regular line of metalworking tools only a moderate business has been done. There has been a little more inquiry in this direction, however, and the trade feels more hopeful regarding the future.

Manufacturers of boilers and engines do not report any material improvement in conditions. Propositions under consideration show no tendency toward closing, and not a great deal of new business has been taken. In the second-hand field there has been a little more activity shown, and sales of a few medium power boilers, engines and pumps have been announced. The business, however, is very much scattered, although there is a little more prospective business in sight.

There have been no new developments in the foundry trade. Orders coming out are comparatively small and cover immediate needs of consumers only. Both iron and steel plants are, for the most part, running irregularly and to a large extent are dependent on daily business. No new tonnage of any size has developed for future delivery. The railroads, locomotive and machine tool builders are not anticipating their requirements, and until conditions generally show signs of improvement it is likely that casting plants will continue to be operated intermittently.

Plans have been completed and estimates invited by Sauer & Hahn, architects, for the erection of a number of new brick and concrete buildings for the Standard Hosiery Company, 1310 to 1326 North Lawrence street. The buildings include a spinning mill, picker house, boiler house, engine house and an office building. The cost of the buildings is estimated at about \$100,000, while about \$30,000 will be expended for equipment. The plans regarding the latter, however, have not yet been completed.

Assistant Director J. F. Hasskarl of the Department of Wharves and Docks, Philadelphia, has plans in course of preparation for a new pier to be built on the Delaware River front. The pier is to be of concrete and wood, on piling, with a two-story steel and corrugated iron structure on it. It is proposed to locate the offices of the Department on the second floor of the pier. The estimated cost of the pier and superstructure is about \$500,000.

Frank Toomey reports a somewhat better demand for

second-hand machinery and tools. Boilers and engines are also said to be in better inquiry, and several fair sales have been made in both these lines. Woodworking machine tools have been more active, and some business has also been done in that line. On the whole, the situation looks somewhat more encouraging.

Seymour & Paul A. Davis, 3d, architects, will invite revised bids for the erection of the proposed workshop buildings for the Thaddeus Stevens Industrial School, Lancaster, Pa., previous bids being considered too high. The proposed shop measures 34 x 160 ft. on the ground plan.

Proposals will be received until February 15 by the Lighthouse Engineer, Baltimore, Md., for furnishing materials and all kinds of labor necessary for the completion and delivery of metal work for beacon lights to be installed at La Trappe River, Maryland.

It is understood that the Wilmington & West Chester Traction Company, which will build an electric railroad from Wilmington, Del., to West Chester, Pa., will begin operations as soon as the weather permits on the Wilmington end of the road. The power house for supplying electricity will be erected, it is believed, at Brandywine Summit.

The Energy Elevator Company continues busy. But little falling off in business has been noted by this concern during the past few months, and full forces and full working hours are being maintained, with enough business on the books to continue for some time. Both local and out of town business continues of satisfactory volume. Recent deliveries by the company include a heavy power freight elevator for shipment to Albany, Ore., an electric freight elevator to Shamokin, Pa., a carriage elevator to Yonkers, N. Y., and three hand power freight elevators to North Branch, Mich.

Until February 7 sealed proposals will be received by the Building Committee of the Board of Trustees of the State Hospital for the Insane, Norristown, Pa., for all materials and supplies required for the erection of a building for convalescent men, costing in the aggregate about \$60,000. Bids will also be received until February 6 for the same class of materials and work in connection with the erection of a chapel and amusement hall costing about \$50,000. Further information regarding the nature of the supplies desired may be obtained from John L. West, steward, State Hospital for the Insane, Norristown, Pa.

Government Purchases.

WASHINGTON, D. C., January 28, 1908.

Sealed proposals will be received until February 25 at Augusta Arsenal, Augusta, Ga., for motor generator sets, motors, air compressor, metal working and wood working machinery, pneumatic hammer, electric and hand cranes, fuel oil furnaces, testing machine, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until February 25 for one air compressor outfit, four pneumatic drills, one gap lathe, one pattern maker's lathe, one screw cutting engine lathe, one milling machine, one planer, one sensitive drill press and one radial drill press.

The Isthmian Canal Commission will receive bids until February 17, circular No. 418, for file sharpening machines and other supplies.

The following bids were opened January 20, circular No. 412, for supplies for the Isthmian Canal Commission:

Class 1. One cross compound condensing engine.—Bidder 1, Allis-Chalmers Company, Milwaukee, Wis., \$15,300; 5, Ball Engine Company, Philadelphia, \$10,500; 24, C. & G. Cooper Company, Mt. Vernon, Ohio, \$14,900; 37, G. & W. Mfg. Company, New York, \$16,947; 41, General Electric Company, Schenectady, N. Y., \$16,400 and \$13,000; 69, Minneapolis Steel & Machinery Company, Minneapolis, Minn., \$17,532; 70, Motley, Green & Co., New York, \$17,174; 83, Providence Engineering Works, New York, \$14,400; 109, Westinghouse Electric & Mfg. Company, Pittsburgh, \$13,470.

Class 2. One 400-kw. generator.—Bidder 1, Allis-Chalmers Company, Milwaukee, Wis., \$6855; 26, Crocker-Wheeler Company, Ampere, N. J., \$6690 and \$5665; 41, General Electric Company, Schenectady, N. Y., \$7200 and \$5127; 70, Motley, Green & Co., New York, \$7228 and \$6170; 109, Westinghouse Electric & Mfg. Company, Pittsburgh, \$7095 and \$5479; 112, Western Electric Company, New York, \$6956.25.

Class 3. One engine driven exciter.—Bidder 1, Allis-Chalmers Company, Milwaukee, Wis., \$1429.50; 13, Buffalo Forge Company, Buffalo, N. Y., \$1072; 41, General Electric Company, Schenectady, N. Y., \$1245; 70, Northern Electric Mfg. Company, Madison, Wis., \$925; 95, B. F. Sturtevant Company, Hyde Park, Mass., \$970; 109, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., \$1725 and \$1656; 112, Western Electric Company, New York, \$1068.

Class 7. Thirty sand pumps.—Bidder 30, Drew Machinery Agency, Manchester, N. H., \$68.80; 34, Fox Bros. & Co., New York, \$48.90; 52, Ingersoll-Rand Company, New York, \$48; 67, Manning, Maxwell & Moore, New York, \$50.10; 97, Sullivan Machinery Company, New York, \$66; 100, Tucker Tool & Machine Company, New York, \$51; 113, West St. Louis Machine & Tool Company, St. Louis, Mo., \$93.

Class 9. One valve reseater.—Bidder 10, W. Bingham Company, Cleveland, Ohio, \$73.50; 30, Drew Machinery Agency, Manchester, N. H., \$83; 34, Fox Brothers & Co., New York, \$75; 56, E. F. Keating Company, New York, \$75; 67, Manning, Maxwell & Moore, New York, \$75; 70, Motley, Green & Co., New York, \$75; 85, Queen City Supply Company, Cincinnati, Ohio, \$78; 100, Tucker Tool & Machine Company, New York, \$75.

The following bids were opened January 21, circular No. 415 B, for supplies for the Isthmian Canal Commission:

Class 1. Alternating current motors.—Bidder 5, General Electric Company, Schenectady, N. Y., \$649.50; 8, National Electrical Supply Company, Washington, D. C., \$1323; 13, Westinghouse Electric & Mfg. Company, Pittsburgh, \$900.

Class 2. One direct current motor.—Bidder 5, General Electric Company, Schenectady, N. Y., \$93.55; 7, Motley, Green & Co., New York, \$115; 8, National Electrical Supply Company, Washington, D. C., \$128; 11, B. F. Sturtevant Company, Hyde Park, Mass., \$107.50; 13, Westinghouse Electric & Mfg. Company, Pittsburgh, \$126.25; 14, Western Electric Company, New York, \$103.

Class 4. One duplex pump.—Bidder 6, Manning, Maxwell & Moore, New York, \$1564; 8, National Electrical Supply Company, Washington, D. C., \$1601; 13, Henry R. Worthington, New York, \$2327.65.

The following awards have been made for supplies for the navy yards, bids for which were opened January 7:

Atlantic Works, Philadelphia, class 21, one adjustable band saw machine, \$3300.

Manning, Maxwell & Moore, New York, class 31, one 20-in. universal milling machine, \$660.

Kenworthy Engineering Company, Waterbury, Conn., class 32, one reheating or forging furnace, \$2240.

C. H. Wheeler Mfg. Company, Philadelphia, class 91, one surface condenser, \$805.

Blake & Knowles Steam Pump Company, New York, class 92, two vertical duplex pumps and two horizontal piston pumps, \$1033.

Industrial Education Meeting.

The first annual meeting of the National Society for the Promotion of Industrial Education, held in Chicago January 23-25, was opened by a public dinner given in the banquet hall of the Auditorium Hotel, at which there were present nearly 400 members and guests. The speakers of the evening were Theodore W. Robinson, first vice-president Illinois Steel Company and chairman Illinois State Committee; Dr. Charles W. Eliot, Cambridge, Mass., president Harvard University; James W. Van Cleave, St. Louis, president National Association of Manufacturers, whose addresses were directed to the consideration of "Industrial Education as an Essential Factor in Our National Prosperity," and Dr. Henry S. Pritchett, New York City, president Carnegie Foundation for the Advancement of Teaching, and president of the society, who spoke of "The Aims of the National Society for the Promotion of Industrial Education."

The earnest interest manifested by the participants in this movement augurs well for success in the future development of a system that will prove effective in raising the efficiency and effectiveness of handicraft among industrial workers. Present at this meeting and working shoulder to shoulder with the foremost educators of the country were seen men of foremost prominence in industrial affairs and recognized leaders of organized labor, working to a common end in the cause of industrial education.

After a few fitting words of welcome Mr. Robinson read a letter from President Roosevelt expressing regret at his inability to be present, in which he said: "My interest in this cause arises not only out of the important results to be achieved by industrial education, both for the wage earner and the manufacturer, but, more than all else, out of the desire to see the American boy have his best opportunity for development. In the interest, therefore, of the American boy, I welcome the efforts of any society like this to focus public attention upon the question and to suggest practical methods for solving it." Continuing, Mr. Robinson spoke in part as follows:

The Society for the Promotion of Industrial Education is the organized recognition of a vital defect in the educational system of this country. The ultimate aim of the society is to promote the prosperity and happiness of our coming generations by increasing their collective efficiency. This country has been sleeping the self-complacent sleep of confidence, born of stupendous resources and wonderful inventive genius, but other nations have possessed themselves of our inventions; and Germany, comparatively poor in nature's heritage, is surpassing us in the markets of the world. The industrial education of Europe is making the Old World new, while apathy and obsolete methods are making our New World old. Our educational development has not kept pace with the marvelous changes that have taken place in the last generation, and it is time that we awake if we are to attain our natural destiny. More than 90 per cent. of the youth of our country progress no further than the grammar school, and of these many are destined to become industrial derelicts merely for want of educational encouragement and opportunity.

Without disparaging any plan of education which seeks its culmination in the university, it is clear that the necessities of this large majority should be better recognized in our primary

schools. The census reports of 1905 show 5,470,321 wage earners. If their average daily earning capacity were increased 25 cents it would amount to over \$400,000,000 per year to them, to their employers and to the country. These figures are startling, out are indicative of the material reward which might be expected. While there will be honest differences of opinion as to the best means of giving our boys and girls their educational right, mutual confidence and harmony must prevail in our endeavors and in our deliberations. The movement for which our society stands appeals to considerations broader than selfishness or avarice, and will brook no opposition born of mistaken self-interest or desire for restrictive monopoly. We stand for the fundamental principle of just opportunity for all.

President Eliot in his address suggested that with the introduction of trade school training in grammar schools the compulsory age limit should be raised three or four years. "All trade schools," he said, "should embrace some manual training. The old idea that the Yankee can turn his hand to anything is misleading. He can't. Conditions have changed, and a great variety of occupations existent to-day were unknown 100 years ago. Educational training must of necessity conform to present conditions."

Speaking from the viewpoint of the manufacturer, Mr. Van Cleave declared that our efforts in behalf of industrial education have been too miscellaneous, too isolated, too haphazard. He called attention to the fact that the little kingdom of Bavaria, with a population not much greater than that of New York City, has now 290 trade schools, giving instruction night and day, in 28 trades and crafts, to pupils from the first to the fifth grades, and stated that in this whole country of 85,000,000 people there are fewer trade schools than in that little German kingdom. He also suggested that there should be a commissioner of industrial education as the head of a bureau of one of the administrative departments.

The final address of the evening, delivered by Henry S. Pritchett, was confined principally to a statement of the aims and purposes of the society, in which he emphasized the fact that the problem involved is one to be dealt with in the spirit of industrial peace—not a spirit of industrial war. Referring to the development and progress of industrial training in Germany and elsewhere, he suggested that some of the methods there employed might be profitably borrowed. "If you can't produce a good thing yourself," he asserted, "the next best thing is to know how to borrow it."

Morning, afternoon and evening sessions were held on Friday, the first of which was presided over by Carroll D. Wright, president of Clark College. Different phases of "The Apprenticeship System as a Means of Promoting Industrial Efficiency" were discussed, and valuable suggestions offered by men close in touch with industrial requirements in skilled labor. In the afternoon and evening sessions a number of thoughtful and interesting papers were read upon pertinent topics, which developed spirited discussion. The morning session on Saturday was devoted to the consideration of "The True Ideal of a Public School System That Aims to Benefit All."

At a business meeting held during the closing session the following officers were elected to serve for the ensuing year: Carroll D. Wright, president; Magnus W. Alexander, vice-president; Frederick O. Pratt, treasurer. Managers for three years: Henry S. Pritchett, Everett V. Macy, Frederick P. Fish, Samuel B. Donnelly, Mr. Halsey, Mrs. B. B. Munford, J. Gunby Jordan and Horace E. Deemer.

French manufacturers have complained because the government gave large orders for railroad rolling stock to foreign firms. On behalf of the government it is explained that domestic works have not been able to make the deliveries required. This, the manufacturers say, has been due to the wide fluctuations in the amount of work given out by the government. It is said, for example, that the total purchases of rolling stock in 1904, 1905 and 1906 were £720,000, £3,680,000 and £6,800,000, respectively. It is argued that these wide differences, which had no relation to the amount of traffic, made it impossible for the manufacturers to maintain their plants on a scale permitting of filling orders given on short notice. By contrast the practice in Germany is cited, the government orders there not having varied more than 6 per cent. over a term of years.

HARDWARE

AT this time of year the trade is permitted to see the balance sheets of such companies as publish them for the information of their stockholders and the public. Although brief and condensed, they give an excellent summary of the business for the period to which they relate and indicate in a general way the results of the business in the profits made or the loss suffered. It is, however, safe to say that when the average man glances over such balance sheet or statement of a modern corporation he little realizes the extraordinary amount of careful, painstaking work involved in order to present in a comprehensive manner the vital statistics of a great industry that he may in a few minutes and almost at a glance learn the volume, the results and many of the features of the business concerned. The merchant or manufacturer who is interested in such a financial résumé relating to a corporation in which he has only a general or perhaps distant interest, may very appropriately, unless his own methods are already admirable and up to date, compare such summary of a great business representing an enormous investment and multitudinous detail, with the manner in which the accounts of his comparatively small business are kept and the uncertainty and indefiniteness of such balance sheet as he is able to make. It is perhaps safe to say that with the great majority of merchants and manufacturers an improvement in their accounting system would be in order.

An illustration of the tendency among the industrial nations to strengthen their manufacturing interests by legislation is furnished in the modification which has been made in the English patent law. The act relating to this matter while quite clear in its general scope is somewhat vague in regard to the requirements that the articles affected shall be made in Great Britain. The clause governing the matter provides that at any time not less than four years after the date of a patent, and not less than one year after the passing of the act, any person may apply to the comptroller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom. Other sections provide means for putting the revocation into effect at once or for postponing it for a period not exceeding 12 months, if the patentee can give satisfactory reasons why the article patented is not manufactured or the process carried on in Great Britain. There is apparently ground for question as to the applicability of the act in cases where a part of the work of manufacture is done outside Great Britain and the work completed within its borders. There is, however, little doubt that the passage of the act indicates a determination on the part of the English to be more strict than heretofore in giving outside inventors the advantage of the protection of their patent laws.

There are evidences already of the alertness of American manufacturers in taking measures to hold the English markets on their patented products. Many of these patents covering important inventions and popular goods are certainly well worth safeguarding, as they are the subject matter of large and profitable trade. The statement is made abroad that a well-known American firm of Razor makers is negotiating for ground near Sheffield on which to erect a plant capable of furnishing

employment to between 400 and 500 persons. Another prominent company, which has a well established trade in England and headquarters in London, is reported to have taken steps to establish a factory at Leicester. It may be presumed that others are moving quietly in the same direction, and that the result of the new law will be not so much a limitation of the sale of the goods to which its provisions apply as the establishment on British soil of factories, the principal ownership of which is in the hands of foreigners. However this may be, the change in the law brings up to many of our manufacturers a practical question which must be considered and decided without much delay. There are doubtless cases in which something must be done to protect their English patents, unless they are willing to let them lapse.

Condition of Trade.

The advance of the season and the greatly improved condition in the finances of the country are working together to quicken the movement in commercial channels. The trade, however, responds only gradually and indeed somewhat sluggishly. Many merchants are, of course, still occupied with closing up the affairs and accounts of the past year and getting things in shape for the spring trade, a process which takes a little longer this year than usual on account of the disturbance wrought by the financial stress now so happily past. A gratifying feature of the situation is the caution which is being exercised in regard to credits. Merchants are careful not to purchase as freely as their stocks, light and in some cases broken, might suggest if regarded apart from financial consideration. Merchants wisely look upon a safe policy as the wisest, and many of them are doubtless endeavoring to clear up their indebtedness before incurring more. In pursuing this course the merchants, whether large or small, should have the encouragement of those to whom they look for the supply of their goods, and there should be no attempt to sell more goods than a customer actually needs. The making of collections and paying of debts is thus receiving much attention from the trade, and the result is that there is a good deal of settling up of old accounts and getting financially into a secure position. In the present condition of things when the financial stress has relaxed, it is recognized as the part of wisdom for the mercantile classes to do all in their power to avoid and prevent commercial embarrassment, as recklessness or mismanagement might result in failures which would have an unpleasant effect on the trade as a whole. Looking over the month which is now ending, the change which has taken place in the main features of the market is most gratifying. Apprehensions which then were entertained have been shown to be groundless; the danger of financial trouble has disappeared; money has returned to its usual channels and the finances of the country have in good measure recovered from a very acute disturbance, and there is apparently little unsettling of credits or financial embarrassment among industrial or commercial houses. In this way a foundation has been laid for business, which within a week or two is beginning to show itself in moderate but in slowly increasing volume. While the time has not come in which the trade see their way clear to purchase with former liberality and abandon, there is a gradual resumption

ing of enterprise and effort, and the purchases which are being made are setting the wheels of trade in motion. While they are in volume much below the normal, they make up on the whole a very respectable aggregate. The tone of the market is not strong and a good many minor concessions are being made, especially in heavy goods, but prices in general are pretty well maintained. The situation regarded all in all records a decided improvement, and existing conditions justify the hope that further progress will gradually be made in the direction of a return to something like an average volume of business and at least fairly prosperous conditions. With the better spirit which prevails among business men and the people at large, merchants and manufacturers alike may push their business with renewed hopefulness and courage, endeavoring to make good by energy, enterprise and effort, any falling off in its volume which might otherwise be experienced.

NOTES ON PRICES.

Wire Nails.—The announcement of the manufacturers of Wire products of their decision to maintain prices for spring trade has resulted in calling out a good many orders from the merchants during the week under review. It is evident that many merchants who were waiting for some definite light as to whether or not a reduction in price was to be looked for have been sending in specifications for their immediate needs. The demand being made upon the merchants, whether wholesale or retail, is, however, still of quite moderate proportions, and some stocks, though rather light, are regarded as sufficient for present requirements. The movement of Nails is, however, on the whole as large as could be expected under the circumstances, and indicates a gradual righting of trade conditions and the developments of increased activity. A marked feature of the situation is the regularity which rules in the matter of prices, there being practically no complaint of cutting. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots to retail merchants.....	2.10

New York.—The local Nail houses have sent notices to the trade stating that the base price of Wire Nails, in small lots at store, commencing February 1, will be \$2.40 per keg. In explanation of the advance it is explained that Nails have been sold at lower figures to reduce stocks with the possibility of a reduced mill price in view; also that as manufacturers have reaffirmed previous prices for the spring trade and low priced contracts with mills have expired, an advance in store price is deemed necessary.

Chicago.—With the reaffirmation of prices on Wire products the hesitation on the part of dealers in placing orders has to a large extent disappeared and business is steadily improving. Monetary conditions throughout the West are now practically normal, and indications are strongly favorable to the development of a normal volume of business within the next few weeks. Stocks are low and dealers must have goods for their replenishment, so that when spring approaches there is likely to be an insistent demand for shipments that will necessitate the active operation of all mills. Quotations are as follows: \$2.23 in car lots to jobbers, and \$2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Immediately following the announcement by the leading interests that prices on Wire Nails would be maintained a large amount of new business was entered by the mills, and specifications against some contracts that had been held up were sent in, and a considerable tonnage in Wire Nails is now on the books of the mills. This week new demand has been somewhat quieter, but this is probably due to the fact that most buyers sent in their orders at once after the announcement was

made that prices would not be reduced. Shipments are fairly heavy and are distributed to nearly all parts of the country, business from the Southwest being larger than from other territory. We are advised that prices are being absolutely maintained, and would not be shaded under any condition. A still larger demand for Wire Nails is anticipated late in March or early in April, when outside building operations are actively resumed. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots, to retail merchants.....	2.10

Cut Nails.—There is some increase noticeable in the volume of business between the mills and their customers on the one hand and the merchants and the consumers on the other hand. The demand in both branches of the trade is, however, quite moderate, as buyers are in no hurry to fill up their assortments whether for wholesale or retail trade. The decision of the manufacturers of Wire Nails to maintain their prices has had its effect also on Cut Nails resulting in some directions in a slight toning up of the market. On the other hand, some of the mills have been shading prices a little. The production of Cut Nails is being kept down to a very moderate amount, and the market thus escapes the menace of a large accumulation. With occasional exceptions the market is represented in a general way by the quotation of \$2.05 on Steel Cut Nails at mill. Iron Nails generally should command about 10 cents more than Steel.

New York.—Local demand is moderate and the market is not regarded strong at quoted prices. No advance has yet been made by Nail houses on Cut Nails to correspond with the toning up in Wire Nail prices. Local jobbers and Nail houses are holding small lots at store at \$2.30 base.

Chicago.—Due to the conservative action of the mills in curtailing output, and supported by the firmness of Wire Nails, Cut Nails have suffered no appreciable demoralization, in face of an exceedingly quiet demand. Local jobbers report a light trade consisting of scattered orders for a few kegs at a time. Stocks are fully equal to present requirements. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, \$2.38; to retailers, \$2.43; steel, to jobbers, in carloads, \$2.28; to retailers, \$2.33.

Pittsburgh.—We note a fair demand for Cut Nails, and prices are probably being a little better sustained, in sympathy with the firmer feeling on Wire Nails. Demand is only fair and is mostly for small lots for actual needs. Prices continue to be slightly shaded, but not to the extent that prevailed some time ago. We quote Steel Cut Nails at \$2 to \$2.05, f.o.b. Pittsburgh, for carload lots, and small lots at \$2.10, to which freight to destination is added. Iron Cut Nails are being held at about \$2.15, at mill.

Barb Wire.—Manufacturers have been making fair shipments of Barb Wire, so that merchants can be in a position to meet the spring trade. While there may be in the minds of some a question as to the length of time that present prices will rule, it is generally recognized that it is wise policy to lay in such a supply of Wire as will enable them to take care of a conservative spring demand. This is the case even where it is anticipated that their sales in this line will be lighter than usual. Shipments by the mills continue to cover increased quantities, and the situation is regarded as gradually clearing. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago.—A very satisfactory increase in specifications has developed during the past week, and a considerable volume of new business in 60-day orders has also been received. Another encouraging feature is noted in the fact that release orders on held up shipments have been coming in freely, so that it is believed most of the deferred tonnage will have been ordered out early in

February. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.38; Galvanized, \$2.68; to retailers, car lots, Painted, \$2.43; Galvanized, \$2.73; retailers, less than car lots, Painted, \$2.55; Galvanized, \$2.85; Staples, Bright, in car lots, \$2.35; Galvanized, \$2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—A fair amount of new tonnage has been placed with the mills since the announcement that prices would not be reduced, tonnage from the Southwest being somewhat larger than from other parts of the country. The trade is still disposed to act conservatively in the matter of placing contracts, and indications are that stocks carried by jobbers will be kept down to a minimum for some little time, or until general conditions are more settled. We are advised that regular prices are being firmly maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Plain Wire.—The great business in Plain Wire being with manufacturers who use it as a raw material, the character of the demand indicates pretty well how they regard the prospects for the season's business. Viewed in this light it is gratifying to note a decided increase in the volume of orders without, however, as yet a very free purchasing. Some orders are also coming in from the trade who handle limited quantities of Plain Wire. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

Chicago.—Due to the same causes and reflecting the same conditions present in other Wire products there is a decidedly better movement in Plain Wire. Makers of Fencing anticipate a reasonably good demand for their product, and now that the stability of values are assured for the spring season they are coming into the market more freely. Quotations are as follows: In car lots, to jobbers, \$2.08, f.o.b. Chicago, and to retailers, \$2.15.

Pittsburgh.—Makers of Fencing and other consumers of Fence Wire have placed orders more freely since the announcement by the leading producers that prices would not be reduced. The mills are in position to make prompt deliveries, owing to the light volume of trade that has prevailed for some time. With the betterment in general conditions it is believed that demand for Fence Wire will steadily improve from this time forward. Prices are firm and are being absolutely maintained. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

Pump and Cup Leathers.—Attention has been called in these columns to the fact that the Leather market is somewhat lower. This condition has been reflected in quotations on Pump and Cup Leathers, which are now being quoted on the generally accepted list at discounts of from 30 to 30 and 10 per cent., according to quantity and class of trade.

Bolts and Nuts.—The tone of the Carriage and Machine Bolt market continues weak, as manufacturers become more and more desirous of booking business to keep their works at least in partial operation. Stove and Tire Bolts retain the noteworthy firmness which has characterized them for many months.

Tacks.—Quotations on Tacks again show irregularity, due to eagerness for business on the part of some manufacturers. The established base price is being considerably shaded on desirable orders and export orders are being figured especially close.

Strap and T-Hinges and Butts.—Representatives of manufacturers of Wrought Butts, Strap and T-Hinges, &c., state that prices have recently been reaffirmed and they do not expect any changes of consequence during the first half of the year. The market is generally reported as steady, with stocks in the hands of the trade fairly well reduced.

Jack and Safety Chain.—No change is observed in the market for Jack and Safety Chain, which is reported as dull, with concessions of 5 to 7½ per cent. or so on established prices generally obtainable.

Wire Cloth, Poultry Netting, &c.—Some announcement of prices on Screen and Hardware grade Wire Cloth and Poultry Netting for delivery after February 1 is daily expected.

Scissors and Shears.—An excellent tone characterizes the market for Scissors, Shears, &c., prices having recently been reaffirmed by leading manufacturers. Business is in moderate volume, but there seems to be no disposition to stimulate business by concessions from established prices.

Washers.—The market for Iron or Steel Washers is soft, although extreme prices are probably no lower than they have been for some weeks. Quotations based on \$6 off list may be taken to represent the market in a general way.

Builders' Hardware.—The Builders' Hardware market still shows the unsettlement occasioned by the readjustment of prices on the part of leading manufacturers reported last week in these columns. Some buyers declare that in many cases the reductions announced do not represent important declines from prices which have actually been obtainable for some time.

Rope.—Demand is not keeping up quite as well as it promised immediately after the first of the year. Manufacturers are, however, making preparations to take care of business as soon as it presents itself, which they anticipate will be in February. During the week values for Manila and Jute Fibers have hardened, while Sisal remains without change. Manufacturers are unwilling to place contract orders at ruling prices. The following quotations fairly represent the market for base sizes: Pure Manila, 11½ cents; B quality grades down to 8½ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to 7¼ cents; No. 1 Jute, ¼-in. and up, 7½ cents; No. 2 Jute, 7 cents.

Window Glass.—According to press reports, the glass workers' association, known as the Amalgamated Window Glass Workers of America, has been dissolved by the courts. If this report is true and the decision stands in the courts it will simplify the Window Glass situation from the manufacturers' standpoint, and will probably facilitate the starting the factories by manufacturers. There is otherwise very little of interest in Glass circles, and not enough business to make a market, either in factory shipments or jobbing lots. Prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association, for Greater New York are as follows: Single strength, 90 and 25 per cent.; double strength, 90 and 30 per cent. discount from jobbers' list. These prices are, however, not closely adhered to.

Linseed Oil.—Demand is on the same moderate scale as has characterized the market for some time. There is an inclination on the part of some buyers to place carload orders if it could be done at lower figures than the crushers are now willing to name. Sales are confined for the greater part to small lots for immediate requirements. Prices in five barrel lots are as follows: State and Western Raw, 42 to 43 cents; City Raw, 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—Local business has been light during the week, as manufacturers are only purchasing in small quantities on account of the general quiet prevailing in all lines. The New York market is represented by the following quotations: Oil Barrels, 45½ to 55 cents; Machine Made Barrels, 55 to 55½ cents.

The Hardware business at Charleroi, Pa., formerly conducted by Duvall & Gault, has been dissolved, the junior member of the firm retiring from the business, which will now be conducted by David Duvall under his own name.

The store of Deisem & Franks, La Moure, N. D., has been destroyed by fire.

CHICAGO HARDWARE REPORT.

Gradual improvement, more pronounced perhaps in Wire and Wire products, but in some degree noticeable in nearly all Hardware lines, is reported by the trade. The establishment of prices has had the effect of bringing out a considerably increased volume of business in Wire Nails and Fencing Wire, which, as the season advances and consumptive demand increases, can reasonably be expected to grow. Both jobbers and dealers, assured that the mills are now in position to make reasonably prompt deliveries, are ordering only for nearby requirements, and are not disposed to contract as far ahead as has recently been their practice. The effects of this policy, now prevalent in practically all lines of manufacture, are seen in the placing of smaller, but more frequent, orders. Announcement has been made of a readjustment of prices on Builders' Hardware. The new schedule represents changes which in the main are toward lower levels, comprising reductions ranging from 10 to 20 per cent. The greatest reductions are naturally found in articles more largely composed of Copper. Prices on the more staple grades have been but slightly changed, and in a few instances are reaffirmed. Reflecting the sharp recession in values of Pig and Scrap Iron, prices of Sash Weights, Cast Washers and other Cast Iron goods show a weaker tendency. Supported by only a moderate demand Sash Weights are offered at from \$23 to \$25 a ton. Jobbers express confidence in the development of a demand for spring goods that will exceed the provision so far made for its supply, and in consequence are looking forward to a liberal increase, both in number of orders and volume of business, within the next few weeks. Deliveries of orders held up on account of the recent financial stringency are in some cases being asked for, and manufacturers' representatives are finding a distinct improvement in general conditions that portends a buying movement, which a little later should result in a fairly active and satisfactory business. Heavy Hardware jobbers report a somewhat improved demand for Tire and Spring Steel from carriage and wagon shops, and a better run of sorting up orders from general shops and dealers. Sheets are moving slowly, the demand not having been notably accelerated by the recent reduction of prices.

LINCOLN'S BIRTHDAY IN THE HARDWARE STORE.

LINCOLN'S BIRTHDAY, on February 12, can be made the occasion of helpful special displays and advertising features. The sale should be planned far enough in advance, so that the whole week can be devoted to this effort, as at this season of the year the results are likely to be better if distributed over a number of days instead of being confined to any one. This year Lincoln's Birthday falls on Wednesday. As most local weeklies are published on that day or later in the week, it will be advisable at least to call attention to the sale in the weekly papers of the week before, even if special price items are not mentioned until the week of the sale. The announcements in the daily papers can begin on Friday or Saturday, the 7th or 8th.

Arrange Windows Early.

It is desirable to arrange the special window displays early, and as Saturday is a busy day in many local stores, this work should be accomplished on Thursday or Friday. Window cards should call attention to the fact that the sale is for the week of Lincoln's Birthday, and if it is deemed inadvisable to display special prices thus early, then these price tickets may be added early in the week of the sale. Under ordinary conditions, however, it will pay to display the special prices, as well as the general announcement of the sale well in advance.

Appropriate Features.

As a center piece for the windows a large picture of Lincoln or a bust draped with the national colors will be effective. Small cuts of Lincoln will be equally attractive as corner pieces for the newspaper announcements.

Then to carry out the idea consistently, bear in mind some of Lincoln's early experiences and troubles. The

fact that he was a woodman and rail splitter is worth mentioning in the windows upon an especially lettered card, and the same historical fact is good to use as an introduction for the advertisements upon which to hang special prices upon Axes, Saws and other outdoor Tools, which should be good sellers in most localities at this season of the year.

The window displays should be largely devoted to such things as those which are mentioned in the announcements.

In Further Detail.

The plan can well be made to cover many other articles in the Hardware line. Modern Lamps and Lanterns can be shown, with a card calling attention to the fact that the youth of to-day does not need to study by candle-light or the glow of the open fire, and at the same time the moderate prices can be featured. Tea Kettles should carry an announcement to the effect that while the style and shape have not changed to any great extent, nevertheless the appearance, weight and handiness have been greatly improved upon. This fact will be impressed by showing an Iron Tea Kettle in company with the more recent nickel and enamel ware sorts. Contrasts in Cooking Utensils can also be made, both in the windows and in the advertisements, in order that the household buyers as well as the outdoor workers may be interested.

A Menu Idea.

Restaurants in large cities often feature special menus upon such holidays, which are purposely designed as souvenirs and are intended to be kept by those of their patrons who may desire them. The Hardware merchant can get some of these printed with the special prices of his sale at a nominal price. Most printers have books of stock designs for such folders, which are attractive and inexpensive.

Such a souvenir might be called "LINCOLN SALE MENU OF SPECIAL PRICES." These will not only be taken home by customers, but will be talked about among neighbors. If they are ready the week before the sale they should prove in themselves effective announcements of the event. It should be remembered, though, that very few local printers can afford to carry such special cards in stock, and orders should be placed far enough in advance to permit the printer to get them from his supply house.

The same plan can be arranged for Washington's Birthday and other holidays, should the merchant find it inconvenient to start for Lincoln's Birthday. However, two events so near together as Lincoln's and Washington's birthdays should not be handled in exactly the same manner.

ALLEN TURNER, one of the oldest and best known Hardware and Stove merchants of western Pennsylvania, died at the home of his son in Sharpsville, Pa., last week, after an illness of one week. He was born near Warren, Pa., on October 18, 1821, moving to Sharon, Pa., in 1852 and embarking in the above business, which for a number of years was the only one in the town. Later he moved to Kinsman, Ohio, where he engaged in the same line, but only remained a year, opening a similar store at Greenville, Pa., where he continued in active business for over 40 years. He was also interested in manufacturing enterprises, having purchased a rolling mill and a woollen mill at Greenville.

WE are advised by J. W. McManus, secretary, that at the annual convention of the Retail Hardware and Implement Dealers' Association of Texas, held in Dallas during the past week, a resolution was unanimously passed that "the Sims parcel post measure just introduced in Congress is against the interest of every citizen of Texas, be he farmer, mechanic, professional man or merchant."

CLIFFORD A. DUNBAR, a well-known Hardwareman of Evans City, Pa., died at his home, in that city, last week, aged 26 years. He was the active head of the business which had been established by his father, Ambrose Dunbar, who retired several years ago.

RETAIL HARDWARE CONVENTIONS.

During the next two months the following retail Hardware conventions will be held. Where the asterisk appears elaborate plans are being made by the association officials for the accommodation of Hardware exhibits by manufacturers and jobbers.

- SOUTH DAKOTA ASSOCIATION,*** Aberdeen, February 4-7. Secretary, H. E. Johnson, Redfield.
- WISCONSIN ASSOCIATION,*** Milwaukee, February 5-7. Secretary, C. A. Peck, Berlin.
- CONNECTICUT ASSOCIATION,** Meriden, February 10 and 11. Secretary, James de F. Phelps, Windsor Locks.
- KENTUCKY ASSOCIATION,** Louisville, February 11-13. Secretary, John R. Sower, Frankfort.
- NEBRASKA ASSOCIATION,*** Lincoln, February 11-14. Secretary, J. Frank Barr, Lincoln.
- WEST VIRGINIA ASSOCIATION,** Elkins, February 18, 19 and 20. Secretary, Leslie Hawker, Shinnston.
- INDIANA ASSOCIATION,*** Indianapolis, February 18-21. Secretary, M. L. Corey, Argos.
- IOWA ASSOCIATION,*** Cedar Rapids, February 18-21. Secretary, A. R. Sale, Mason City.
- NEW YORK ASSOCIATION,*** Buffalo, February 18-22. Secretary, John B. Foley, Syracuse.
- MISSOURI ASSOCIATION,** St. Louis, February 24 and 25. Secretary, F. D. Kansteiner, St. Louis.
- PENNSYLVANIA ASSOCIATION,*** Altoona, February 24, 25 and 26. Secretary, J. E. Digby, McKees Rocks.
- OHIO ASSOCIATION,*** Columbus, February 25-27. Secretary, Frank A. Bare, Mansfield.
- MINNESOTA ASSOCIATION,*** St. Paul, February 25-28. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.
- ILLINOIS ASSOCIATION,*** Peoria, February 26-28. Secretary, L. D. Nish, Elgin.
- NEW ENGLAND ASSOCIATION,*** Boston, March 11 and 12. Secretary, Charles L. Underhill, Somerville, Mass.

Ohio Hardware Association.

A large postal has just been sent out to the members of the Ohio Hardware Association in which they are encouraged to come to the convention at Columbus, February 25 to 27, and "get new ideas," and by attending the Hardware exhibition "see and study the newest in Hardware lines." It is intimated that the merchant will be "the better, broader and bigger" for it.

New York Hardware Association.

The Hardware exposition, which will be held in connection with the annual meeting of the New York Retail Hardware Association, at Buffalo, N. Y., February 18 to 22, promises to be a very complete representation of Hardware and related lines. The booths, with very few exceptions, have been disposed of and the great variety of goods on display should prove interesting to the large number of merchants who are expected to attend the convention. We are advised that quite a number of Hardwaremen from other States have signified their intention of attending the New York convention.

Indiana Hardware Association.

The Question Box will perhaps be the most conspicuous feature of the proceedings of the Indiana convention at Indianapolis, February 18 to 21. Another noteworthy feature will be an address by Governor Hanly on "State Business Problems." Charles W. Burrows, Cleveland, Ohio, will discuss Parcel Post, and O. B. James, Richland Center, Wis., will read a paper on "Country Store Advertising." S. R. Miles, president of the National Retail Hardware Association, will participate in one of the sessions and will make an address. Spaces in the Hardware exhibition have nearly all been taken, and this feature of the gathering will doubtless receive close attention from visiting Hardwaremen. Not far from 1000 merchants are expected to attend the convention. Since the last meeting nearly 130 new members

have come into the association and further accessions are being received daily. In fact it is remarked by Secretary M. L. Corey that "Non-members are getting scarce in Indiana."

West Virginia Hardware Association.

The programme for the meeting of the West Virginia Association, which will be held at Elkins on February 18, 19 and 20, has practically been determined upon. It includes addresses by W. P. Bogardus, Mt. Vernon, ex-president of the National Retail Hardware Association; Col. Morris B. Belknap, Belknap Hardware & Mfg. Company, Louisville, Ky.; C. D. Barbe, Morgantown, and Charles Barklay, Pittsburgh, Pa. Papers on topics of trade interest will also be presented by C. J. Richardson, Marlinton and C. S. Davis, Oakland, Md. The Question Box discussion conducted under the efficient leadership of Mr. Bogardus, should prove especially interesting and valuable.

Nebraska Hardware Association.

The four-day convention of the Nebraska Retail Hardware Association at Lincoln will begin on Tuesday, February 11, the scene of the business sessions being at Fraternity Hall, and the Hardware exhibition being given in the Lincoln Auditorium, in the immediate neighborhood. Among the formal papers which will be read at the meeting are: "Association History," by M. L. Hargelroad, Holstein; "Battle for Life with Catalogues," by A. C. Clark, Chicago; "Getting and Holding the Farmers' Trade," by C. B. Diehl, Stratton; "Harness and Saddlery in Connection with the Hardware Business," by N. P. Hanson, Upland; "Local Associations," by H. N. Wine-land, University Place; "Taking the Annual Inventory—Improving Our Methods," by President De Vol, Council Bluffs, and "Heating and Ventilating," by H. J. Fueller, Philadelphia, Pa. A special feature of the proceedings will be a discussion of parcel post legislation, which will be opened in an address by W. S. Wright, Omaha, president of the National Hardware Association. The association will be welcomed to the city by Gov. George L. Sheldon and F. W. Brown, mayor of Lincoln. The sessions of the convention will all be held in the afternoon, so that the members will be at liberty to inspect the exhibits by manufacturers and jobbers in the morning and evening. A very attractive programme of entertainment has been prepared, and it is expected that the members will find the social features of the gathering very enjoyable.

South Dakota Hardware Association.

We are advised by H. E. Johnson, Redfield, secretary of the South Dakota Retail Hardware Association, that the coming convention at Aberdeen, February 4 to 7, promises to be a most attractive and successful one with a large and representative attendance of the members. The Hardware exhibition, which will be held in the Aberdeen Auditorium, is relied upon as a big drawing card for merchants, and especially those who have embarked in business during the past year. The exhibit space has been going fast, and it is expected that all the accommodations will have been taken up by the opening of the convention. A special rate of a fare and a third on the certificate plan, good on all railroads in the State, has been secured. Among the addresses which will be made at the convention will be those of Vice-President A. T. Stebbins of the National Retail Hardware Association; Prof. E. F. Ladd, Fargo, N. D., who will discuss "Pure Paints and the Paint Law"; E. J. Mannix, Sioux Falls, who will talk on "Trade Channels"; M. J. Pilkington, Des Moines, Iowa, who recently secured the indictment of a Chicago catalogue house by the Federal Grand Jury on the charge of using the mails with intent to defraud, and who will address the association on the subject of "Retailing of Merchandise a Science," and R. E. Saberson of the Berkley System Company, Sioux City, Iowa. The Question Box will occupy a good deal of time during the convention, as it has been found that the discussion of subjects thus brought up is very instructive and interesting to the members. A few of the questions thus

far submitted are the following: How to Attract the Ladies to a Hardware Store, the Keeping of a Stock Book in a Retail Store, Publicity Advertising, How to Handle Mixed Paints Profitably, the Best Way to Get and Hold the Farmers' Trade, and the Offering of Premiums.

New England Association.

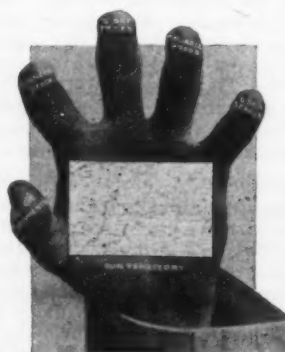
The Executive Committee of the New England Hardware Dealers' Association met at the rooms of the Boston Merchants' Association on the 22d inst. The Hotel Vendome was decided upon as headquarters for the 1908 annual convention, to be held March 11 and 12. Programme plans are being definitely arranged and the annual *Bulletin* of the association, which will be issued about February 20, will contain full particulars. D. Fletcher Barber, Boston, is chairman of the Committee on Exhibits. On March 15, 1893, the association was organized and the convention this year will be something of a reunion, marking the fifteenth anniversary. The membership roll and treasury balance are considerably larger than ever before in the history of the organization.

Illinois Hardware Association.

The Question Box will probably be the most important feature of the annual convention of the Illinois Retail Hardware Association, which will be held at Peoria, February 26 to 28. Special efforts are being made to make the discussion of questions practical and interesting, and the members are invited to send queries to H. G. Cormick, Centra, or J. T. Nofsker, Rock Island, who have the matter in charge. A good deal of attention will also be devoted to Hardware window display and in this connection a number of prizes are offered for meritorious exhibits. One prize will be offered for the best display made by a Peoria Hardware store during the convention, four additional prizes being offered for photographs of window displays in other towns of the State, graded according to population. The judges in this window display contest will be appointed by the president on the first day of the convention, and the awards will be made during the meeting. So far as addresses at the convention are concerned, arrangements have already been made to secure the presence of Charles W. Burrows, Burrows Publishing Company, Cleveland, Ohio, who will discuss parcel post, and John I. Gibson, Battle Creek, Mich.

A Good Grasp.

THE January number of "Hardware Hints," the bright and up to date house organ issued by Logan-Gregg Hardware Company, Pittsburgh, Pa., bears the unique and



All Within Our Grasp.

striking cover design, reproduced herewith. The illustration with its clever subjoined caption is certainly a graphic method of suggesting the strength of the company in the territory which it covers, indicated by the map printed on the palm of the hand. The causes of the concern's prestige, or, we might say, the elements of its strength as suggested by the design, are indicated by the following phrases printed on the ends of the powerful and wide reaching fingers of the hand: GOOD SERVICE, RELIABLE GOODS, RIGHT PRICES, COMPLETE STOCK, QUICK SHIPMENTS.

BUTLER BROS., Chicago, New York, Minneapolis and St. Louis, in their "Our Drummer" catalogue for February, especially invite price comparisons and call attention to Valentines, Easter Goods, Tinware and Enameled Ware specials, and leaders for a 25-cent sale offered at \$2.25 per dozen.

PACIFIC COAST HARDWARE ORGANIZATIONS.

THE annual meeting of the Oregon Retail Hardware Association was held in Portland on the 21st and 22d inst. The election of officers resulted in the choice of the following officials for the ensuing year: H. J. Altnow, Woodburn, president; H. C. Garnet, Medford, vice-president, and Frank Dayton, Portland, treasurer. Messrs. Altnow and Dayton were re-elected, Mr. Garnet succeeding E. F. Willis, Banks, as vice-president. A secretary will be chosen later. The Executive Committee chosen comprises E. F. Willis, Banks; W. A. Johnson, The Dalles; Drew Griffin, Eugene, and Frank Spencer, Salem. The members of the association were tendered a banquet at the Portland on Tuesday evening. Governor Chamberlain was among those who attended the banquet, and made a very felicitous address.

Following the meeting of the Oregon Association Hardwaremen interested in the Pacific Federation of Hardware and Implement associations gathered together and placed that organization on a permanent basis. More than a score of merchants from the States of Oregon, Washington and Idaho were present, and announcement was made that California, Utah and Colorado bodies had expressed a desire to join, although not regularly represented at the conference. John Smith, president of the Inland Empire Association, called the meeting to order, explaining the object of the meeting was to dissolve the temporary federation formed last year and establish a new organization. E. W. Evenson, Spokane, Wash., then retired as temporary secretary, receiving a vote of thanks for his effective work in connection with the organization. E. F. Willis, Banks, Ore., was chosen as temporary chairman. A committee was appointed to frame a constitution and by-laws, consisting of John Smith, Walla Walla, Wash.; C. S. Graybill, Nampa; C. W. Stockwell, Portland; R. L. Spiker, Lewiston, Idaho; H. J. Altnow, Woodburn, Ore., and E. W. Evenson, Spokane, Wash. E. F. Willis was formally chosen president of the Federation, and R. L. Spiker, Lewiston, Idaho, and J. F. Cook, Boise, Idaho, vice-presidents. The election of a secretary-treasurer has been deferred until a later date.

Philadelphia Hardware Merchants' & Manufacturers' Association.

At the annual meeting of the Hardware Merchants' and Manufacturers' Association of Philadelphia, held at the association rooms in the Bourse Building in that city, the election of officers for the ensuing year resulted as follows: President, Edward S. Jackson, Miller Lock Company; vice-president, Paul A. Griffiths, Shields & Bros.; secretary-treasurer, T. James Fernley. The following directors were also chosen: William W. Supplee, Supplee Hardware Company; Charles Z. Tryon, Edward K. Tryon Company; Thomas Devlin, Thomas Devlin Mfg. Company; Joseph J. McCaffrey, McCaffrey File Company; A. S. King, National Enameling & Stamping Company; Samuel Disston, Henry Disston & Sons. The association, after referring to the fact that the Philadelphia banks during the recent financial stringency were able and willing to extend to the city's manufacturers and merchants sufficient currency to meet payrolls and other urgent needs, adopted resolutions thanking the Clearing House Association and pledged the manufacturers' and merchants' support. The twenty-second annual banquet of the association will be held at the Bellevue-Stratford on Thursday evening, 30th inst.

WILLIAM SCHWENE, a member of the Schwene Hardware Company, and also of the Schwene Mfg. Company, Ogden, Iowa, was struck by a train on the Chicago & Northwestern Railroad, January 14, receiving injuries from which he died in a few hours. In 1898, Mr. Schwene purchased the Hardware business of Sturtevant & Son, when the Schwene Hardware Company was established. The Schwene Mfg. Company was organized in 1906, and a factory was built for the manufacture of the Apex Coaster Wagon, which was Mr. Schwene's own invention. He was 34 years of age.

Inland Empire Implement and Hardware Association.

THE annual convention of the Inland Empire Implement and Hardware Association was held at Spokane, Wash., on the 15th, 16th and 17th inst., President R. L. Spiker, Lewiston, Idaho, in the chair. Addresses of welcome were delivered by C. Herbert Moore, Mayor of Spokane, and F. E. Goodall, president of the Spokane Chamber of Commerce. The responses to these addresses were made by President Spiker and C. L. Butterfield, Moscow, Idaho, respectively.

The usual question box was a feature of the proceedings. Among the questions which called out considerable discussion were the following: Does it pay to canvas for business? Does it pay to give presents to customers? How should slow accounts be collected? Is it policy to carry a low quality of goods to meet catalogue house competition?

A committee appointed for the purpose of considering the matter of incorporating the association recommended that the president appoint a committee of five, including the secretary and president ex-officio, with full power and authority to proceed to incorporate the association under the name of the Inland Empire Implement and Hardware Association, the word dealers being omitted.

Parcel Post.

The following resolution in regard to parcel post legislation was adopted unanimously:

Whereas, The Inland Empire Implement and Hardware Association, in convention assembled, after considering the proposed changes in our present parcel post as suggested by Postmaster-General Meyer, believe that the best interests of the retail merchandising interests of the entire country can best be served by leaving the present postal laws unchanged, but we do most earnestly protest against the present activity of the Postmaster-General in his attempt to secure the passage of his proposed parcel post extension, and respectfully ask that he either be stopped or compelled to extend the franking and printing privilege of his office to those opposed to his suggested plans; be it

Resolved, That we are opposed to any and all changes or proposed changes in our present parcel post, either as to increasing the weight limit or the reduction of the rates thereon. Instead, we ask that the present rate on first-class matter be reduced from 2 cents to 1 cent. This latter change would benefit all alike; the proposed changes would not.

Mutual Fire Insurance Association.

The following officers and directors of the Washington Hardware and Implement Dealers' Fire Insurance Association were elected for the new year, Messrs. Lucas, Scott, Loy and Evenson being re-elected: President, W. P. Lucas, Davenport; vice-president, L. A. Loy, Fairfield; treasurer, E. E. Scott, Oakesdale, and secretary, E. W. Evenson, Spokane, Wash.

The following persons were chosen directors for three years: J. W. Cupples, Downs; F. W. Kaser, Walla Walla; John Raymer, Reardon; W. F. Chalenor, Palouse; L. W. Anderson, Rosalia, and C. L. Butterfield, Moscow, Idaho.

Election of Officers.

The following officers were elected to serve during the ensuing year:

PRESIDENT, John Smith, John Smith Company, Walla Walla, Wash.

FIRST VICE-PRESIDENT, John Raymer, Reardon, Wash.

SECOND VICE-PRESIDENT, I. C. Hattabaugh, Grangeville Implement Company, Grangeville, Idaho.

SECRETARY-TREASURER, E. W. Evenson, Spokane, Wash.

DIRECTORS: T. E. Miller, Nezperce, Idaho; A. T. Johnson, Garfield, Wash.; C. E. Max, Coeur d'Alene, Idaho; G. R. Bradshaw, Ellensburg; S. W. Bier, Lind; Hugh Eaton, Elberton; John Smith, Walla Walla; J. H. Berge, Davenport; E. E. Plough, Wilbur; John Raymer, Reardon; I. C. Hattabaugh, Grangeville, Idaho; A. Z. Wells, Wenatchee; C. I. Butterfield, Moscow, Idaho; E. L. Scott, Oakesdale; W. A. Bell, North Yakima; J. R. Stevenson, Pomeroy; R. L. Spiker, Lewiston, Idaho; C. A. Loy, Fairfield.

Contract Notes.

President Spiker called attention to the fact that in the State of Washington the law required contract notes to be recorded before they become binding and had the

effect of chattel mortgages. He also called attention to the fact that the expense of foreclosure was too high, and that in cases where the debt was small the cost was practically prohibitive.

Mr. Miller spoke at some length on the subject of the exemptions to which the debtor was entitled. He said they were unfair and entirely too high. He also said that the requirements in attachment cases were improper, and contended that when action was brought against a debtor the debtor should not be allowed to move his property out of jurisdiction or to dispose of it without first giving a bond to secure the debt sued for.

Mr. Nankervis declared his belief that it ought to be made not only a misdemeanor but a crime for a man to dispose of property for which he had given a contract note. He said that the law permitted merchants to follow the property and take it from whoever might have purchased it from the debtor, but gave no recourse along criminal lines against the debtor selling the property.

In accordance with a resolution adopted the new president was empowered to appoint a committee on legislation to look after these and other matters affecting the interests of merchants.

Harness as a Hardware Line.

A. Z. Wells, Wells & Morris, Wenatchee, Wash., presented a paper on "Harness in a Hardware, Implement and Vehicle Store and My Experience With It." Mr. Wells' tribute to Harness as a profitable and very satisfactory Hardware line was in part as follows:

Five and one-half years ago our firm purchased a Hardware and Implement stock in our splendid little city and immediately added a small line of Harness goods. Our Harness trade from the beginning was fairly compensating, but our Harness not entirely satisfactory, nor were we able to get to the point where we could have it so. The difficulty led us to believe there was a demand for a Harness above the average, and we decided to manufacture it ourselves. We were exceptionally fortunate in securing the services of a young man, a first-class workman, honest and full of ambition, to make our first lot of Harness. He is now the manager of our Harness department, and to him is due a large share of our success.

Our Instructions to Him

when he came with us were to make the very best Harness possible out of first-class stock and good workmanship. His efforts brought increasing cost, but a very much better grade of Harness. We lost many sales at the start, on account of price, but both quality and prices were strictly maintained. By doing a great deal of advertising and hard work we were able to keep him busy, and in a short time add another workman. The trail of the first six months of business did not lead through a path of roses. However, we talked Harness, thought Harness and advertised Harness in every way, finally adopting the idea of a guarantee. This we called the

"Wells & Morris Guarantee."

and no advertisement ever appeared in reference to our Harness that did not enlarge upon this guarantee, nor would we permit our Harness to leave the store without bearing the stamp, "Made by Wells & Morris," and the purchaser assured that it was guaranteed in every way.

We made our guarantee mean something—mean precisely what it implied—and in doing this we made a reputation not only for our Harness but for our firm that has many times repaid its cost. To-day, the "Wells & Morris Guarantee" is known and recognized all over Chelen, Okanogan and a very large part of Douglas counties. Our Harness sales register, since January 1, 1906, shows the names of 428 satisfied customers, who are using our own make of high grade Harness, and I venture to say at prices in excess of those of any other retail house in the State.

We made and had the reputation for quality, and they knew it and were willing to pay for it. The catalogue houses have not bothered our Harness; our class is too high for them.

We have not nor do we intend to take one penny off the quality of our Harness nor off the price of it. On the contrary, we are turning out a very much better Harness to-day and are selling it at an increased price

than when we began manufacturing. By vigorously and unceasingly advancing our own standard of excellence we have brought friends by the score up the hill toward perfection.

Cream of the Business.

We regard the Harness end as the very cream of our business. It comes with the least effort and expense of any line, and it carries our name to the most remote corners of our trade. Through the unpaid efforts of our satisfied customers our territory is constantly expanding and we have the past year received many orders from trade people we have never seen.

Can I think that Harness Goods have been out of place in our Hardware and Implement store? No, indeed. They have been of the greatest benefit to us. The Harness line has been the entering wedge to some of the very best trade we have to-day.

E. E. Lucas' Address.

E. E. Lucas, Davenport, Wash., read a paper in which he referred to some things which a merchant should avoid if he desired success in business, in part as follows:

One goes into business presumably to make money, and he cannot pay the expenses of conducting his business, support his family, educate his children and lay up something for a rainy day by selling at less than a reasonable profit.

By selling at less than a reasonable profit you are not true to yourself and family.

By cutting a price, to entice a customer from your competitor, you are not doing yourself any good, and are actually robbing your competitor.

Making special prices to people living near another town is nothing but piracy, and if followed until your own trade gets on to it you are sure to reap a just reward.

By allowing your notes and accounts to run longer than they ought you lose your own peace of mind and get into disputes with your wholesale dealer. It is also unfair to your bank to compete with it in this way. A dealer, however, who has money enough to do the banking of his community in this roundabout way should have enough to go into the banking business himself.

Making unconditional guarantees on edged tools will subject you to imposition by people who will, on account of the guarantee, misuse them, and if you do not succeed in getting the wholesaler or manufacturer to replace them it is sure to leave a bad taste in your mouth.

In overbuying you will lose as much money as you will from any of the other leaks in your business. An extra 5 per cent. offered by the specialty man to induce you to order a quantity in excess of your needs may look good at the time, but when you have seen the last of the goods you will see that saving fade away, and with it a good sized loss besides. Business conditions are such in our territory now that goods can be had from the jobbers in much less time than formerly, and they tell us that they are not only willing but glad to carry the stocks.

If you buy a line to keep the salesman from selling the other fellow, you are sure to be sorry for it. If you don't buy some more the next time, no matter how many you may have left, this same salesman is almost sure to try to load your competitor. This tends to demoralize trade and is apt to cheapen the goods, but it is a point entirely lost sight of by over zealous salesmen.

By doing too much yourself you are too busy to be glad to see your customers, and nothing will queer you sooner than a reputation for being grouchy. This is not an excuse for laziness, for a business man should and must be busy all the time.

J. N. Nankervis' Address.

J. N. Nankervis, Moscow, Idaho, read an interesting and suggestive paper entitled, "What Have You In Your Safe?" from which we make the following extracts:

I presume that fully 95 per cent. of those present here have closed their books for the year 1907, and what have you in your safe to show for your past year's work? I have since we have been meeting here met a great number of merchants, and I regret to state there is not one but has told me he has been satisfied with the amount of business done, but dissatisfied with the results. There are evils in all businesses, I presume, but I know there are evils in the Implement business.

One of the Greatest Evils

we have to contend with is the evil of doing business without considering about satisfactory results. We start in the spring of the year with hope; we anticipate a nice business, and we hope we will have results, but the latter part we do not consider. We go on and the further we go through the year the more anxious we are to do

business, without getting down to the vital point of ascertaining whether it will be satisfactory to us or not. When the close of the year comes around it has not been and has not showed profit enough to justify the amount of capital invested or the amount of labor and worry invested in that year.

Percentage Instead of Dollars and Cents.

Another evil we have to contend with is the folly of the Implement dealer considering his profit upon the articles he is selling in dollars and cents instead of on a percentage basis. You do not pick up a Hand Saw and say I will sell that for \$1 or \$1.50; you do not pick up an Axe and say I will sell that for \$1 or \$1.75 or \$2; you do not pick up a Horse Collar and say I will sell that for \$4. You find out the cost, plus your expense, plus a reasonable profit, figure out your freight and so forth. Now that is one of the things that should be eliminated. We do not go down to the bottom; we try to imagine what the results will be, and the consequence is that we fail to see what the profits really are.

We carry too long our supposed profits—our supposed assets—and we have a great lot of assets that, while we are carrying them as assets, they are really liabilities. You may have a note in your safe and you may take a team and send a man out to collect it. There may be a profit of \$4 in it, but the profit is entirely eliminated by one livery hire if your collector fails to get it. When a note is two or two and a half years old don't consider it at all; cut it out entirely. Let such notes show up as profit if they are paid. When you have accumulated a lot of old stock don't consider that as you do your new stock; cut it in two; then get right down to what is profit; that's the only successful way; and if you do you will find then you will be making some money and your business will be satisfactory.

Go home and get a big, long lead pencil and a sheet of paper; don't take anybody into your confidence, or any one's word, but get out that ledger of yours, and get out your bills payable book and your note pouch and go over them carefully. Be honest with yourself; care nothing for the world or for anybody, but just figure up in your own mind where you stand.

Other People's Money.

E. M. Brannich, manager of the Studebaker Brothers Mfg. Company's Northwest branch, addressed the convention on the subject of "Other People's Money." We give the following extract from Mr. Brannich's remarks:

There is no class of creditors to-day who can get more credit in proportion to their ability to pay, or in proportion to their means, than the farmers. In fact, many of them are trusted too much for their own good. I myself know of instances where farmers, whose whole worldly possessions consisted of an old broken down Sulky Plow, a Harrow and three or four horses, have been trusted as high as \$2500, for farm machinery. In fact, I have known some of them to be trusted as high as \$4000, for a threshing outfit, when they did not have money enough to pay the freight. The result was they had to use other people's money. If the crop failed in the particular neighborhood where the threshing outfit was sold, the chances are the manufacturer had to carry that debt over and finally make a loss.

My advice to you is to follow up your collections close, and do not let the other fellow use your money. Do not allow him to stand you off when he sells his wheat and invest the money in another quarter section of land, or put it in some speculation whereby you furnish him the funds.

At the annual meeting of the stockholders of the Simeon L. & George H. Rogers Company, Hartford, Conn., manufacturer of Silver Plated Ware, Charles P. Cooley retired from the office of treasurer on account of ill health. The stockholders and directors elected the following board of officers; President and treasurer, George M. Hallenbeck; vice-president, Edgar F. Waterman; clerk, Harry L. Cram; secretary and assistant treasurer, R. E. Sage; directors, George M. Hallenbeck, Wallingford, Conn.; Harry C. Ney, Farmington, Conn.; P. Henry Woodward, Charles P. Cooley, Edgar F. Waterman, Thomas W. Russell and Charles B. Whiting, all of Hartford.

THE ROCK ISLAND HARDWARE COMPANY, Rock Island, Ill., is preparing to move from its present quarters into an adjoining building, which will afford double its present floor space. The company is now under the management of L. Schricker, who is giving special attention to the jobbing trade. Several lines are being added which have not heretofore been carried.

NATIONAL BOARD OF TRADE OPPOSES PARCEL POST AND FAVORS PENNY POSTAGE.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., January 28, 1908.

ONLY the somewhat peculiar parliamentary rule adopted by the National Board of Trade, which requires a two-thirds vote to carry a proposition, prevented the passage of a resolution giving sweeping condemnation to the parcel post projects of the Post Office Department at the board's annual convention, held in this city during the past week. The vote against "any legislation looking to the establishment of a parcel carrying system in connection with the Post Office Department" was 38 to 22, from which it will be seen that a change of two votes in the total of 60 would have carried the resolution, notwithstanding the extraordinary two-thirds rule. The discussion of the parcel post question occupied the board nearly an entire day and brought out some exceedingly interesting comments and criticisms of the Post Office Department's campaign.

A Flood of Resolutions.

No less than nine resolutions relating to the parcel post question, presented by the subordinate bodies included in the membership of the National Board of Trade, were referred to the Postal Committee on the first day of the convention. The Philadelphia Board of Trade indorsed the rural parcel post project, and the plan for reducing the rate on merchandise from 16 to 12 cents, at the same time increasing the weight limit from 4 to 11 lb. The Scranton, Pa., Board of Trade declared its opposition "to any further extension of the postal service in the direction of what is termed parcel post until after 1-cent letter postage shall have been obtained, believing such extension would so increase the postal deficit as to make 1-cent letter postage forever impossible." The Baltimore Board of Trade indorses the Postmaster-General's entire programme in a resolution declaring that the cheap rural rate "is now in practice in 17 foreign countries without discrimination against cities."

The Cleveland Chamber of Commerce and the Nashville Board of Trade presented identical resolutions against the parcel post, declaring that "circumstances in this country in regard to social conditions, length of haul, density of population, lack of monopoly of carriage, improbability of the establishment of a zone system, &c., render an extensive development here of a parcel post carrying system, such as exists in several foreign countries, certain to entail a loss upon the Government of most serious proportions, amounting to scores of millions of dollars for equipment expense and further involving an operating deficit of enormous proportions annually, and this whether the rate be made high or low."

National Hardware Association's Protest.

The National Hardware Association, represented at the convention by T. James Fernley, secretary, presented its protest in the following terse language:

Whereas, The Postmaster-General has announced that he proposes to recommend a parcel post system to Congress;

Resolved, That in the name of the wholesale and retail trade of the country we protest against any character of parcel post.

The New York Produce Exchange advocated the Postmaster-General's projects, but the Pittsburgh Chamber of Commerce opposed any reduction except that involved in the compromise proposition providing for the consolidation of third and fourth-class mail matter at the rate of 1 cent for two ounces. The Italian Chamber of Commerce, which for some occult reason holds membership in the National Board of Trade, presented a resolution recommending the Postmaster General's entire programme to the favorable consideration of Congress, declaring that it would undoubtedly "benefit the commercial interests of the people of the United States by giving them a well regulated, quick and cheap service." It is possible that this resolution was intended as a delicate compliment to the Postmaster-General, who formerly served as United States Minister to Rome.

One-Cent Letter Postage

was strongly advocated in a resolution submitted by the National Hardware Association, and was also urged by the Boston Associated Board of Trade, the Boston Merchants' Association, the Cleveland Chamber of Commerce, the Nashville Board of Trade, the Philadelphia Trades League and the Scranton Board of Trade. The penny postage proposition was therefore put forward, not only by those organizations opposed to parcel post, but also by several which favor the Postmaster-General's plans. It goes without saying that the establishment of a parcel post would defer the adoption of penny postage for many years to come, and it is quite possible that had the two propositions been submitted as alternatives several of the organizations advocating the Postmaster-General's programme would have elected to push 1-cent postage rather than parcel post.

The Majority Report.

In order that neither side should have cause for complaint the Committee on Postal Affairs, consisting of nine members, was selected as evenly as possible from among the advocates and opponents of the parcel post project. Its sessions were exceedingly animated, and its members, finding themselves unable to agree, finally submitted two reports, one signed by the majority of five and the other by the minority of four members. The majority report, which embraced an unequivocal rejection of the Postmaster-General's programme, was as follows:

Whereas, Various bills have been introduced into Congress looking to the establishment of a parcel carrying system in connection with our postal service; and

Whereas, The Postmaster-General, influenced doubtless by his life abroad in the diplomatic service, where all conditions are different, has made recommendations in this direction; and

Whereas, The National Board of Trade believes that any bill of this sort would prove harmful to most business interests, large and small, all over the country, and furthermore, that even a conservative bill would prove but an entering wedge to further legislation less conservative in nature and more harmful in operation; therefore be it

Resolved, That the National Board of Trade is opposed to any legislation looking to the establishment of a parcel carrying system in connection with the Post Office Department at this time.

Against Parcel Post

Nearly three hours were spent in discussing this report and the one presented by the minority of the committee. The first vote taken was on the majority report opposing the parcel post, and a call of the roll showed 38 in its favor and 22 against it. Although a large majority of the members present were thus recorded against a parcel post, the vote fell slightly short of two-thirds, and the report was therefore declared "not adopted." The minority report was then taken up for consideration, although it was apparent that it could not be adopted. After some debate the representative of the Philadelphia Board of Trade submitted the following resolution as a compromise:

Resolved, That the National Board of Trade has heard with interest and approval the views of the Postmaster-General looking to an extension of the work of his department, and that it specifically recommends the creation of a parcel post in connection with the rural free delivery at the rate of 5 cents for the first pound and 2 cents for each additional pound, with limitation of weight not to exceed 11 lb.

This resolution was recognized as merely a part of the Postmaster-General's parcel post plans, and but 26 votes in its favor could be mustered. It therefore failed, and the board proceeded to the consideration of other matters.

Notwithstanding the failure of the opponents of a parcel post to secure a two-thirds vote against it, they scored a clean cut victory on the question of penny postage. The resolution presented by the National Hardware Association urging "all trade bodies to co-operate with us in an effort to have a 1-cent letter postage measure adopted," was put through by such an overwhelming *viva voce* vote that a formal roll call was not demanded.

Summing Up the Results

of the discussion of postal affairs, therefore, it appears that the board adopted a penny postage resolution by a practically unanimous vote, and by a vote of 38 to 22 entered a strong protest against the entire parcel post programme of the Post Office Department. Inasmuch as the National Board of Trade at its annual conventions in

the past has almost uniformly favored a domestic parcel post, the action taken at its last meeting is certainly highly significant. The fact should also be borne in mind that the board is made up of commercial bodies representing the large cities, which, of course, do not reflect the sentiment of the rural communities or the views of the small retail merchants of the country.

Half a Century of Rope Making.

UNDER the above title, A. Leschen & Sons Rope Company, St. Louis, Mo., is issuing an attractive catalogue relating to Wire Rope, Wire Rope Fastenings, Sheaves and Pulley Blocks. The book is prefaced with a historical sketch of the company. The business was founded in St. Louis in 1857 by A. Leschen, who in a small way began the manufacture of Hemp or Fiber Rope. The company later began the manufacture of Wire Rope, and to-day its St. Louis plant covers an area of 33 acres. Four branch houses and 28 agencies are now distributing its product. In its progressive growth of half a century there have been but few administrative or other changes in the company. In 1872 Henry Leschen, now president of the corporation, became a partner with his father under the firm name of A. Leschen & Son, and five years later when John A. Leschen, now vice-president, entered the concern, the name was changed to A. Leschen & Sons. The company was incorporated under its present title in 1886. The catalogue contains much valuable information relative to the treatment and adaptability of various forms of Wire Rope to special kinds of service. Numerous illustrations showing the arrangement of strands are supplied, which give a clear idea of Rope construction. There is also an interesting chapter on splices, in which specific directions are furnished for making long running splices that will smoothly join the ends without weakening the rope.

Screen Doors and Window Screens.

THE CONTINENTAL COMPANY, Detroit, Mich., advises us that the business on its books thus far exceeds that of the season of 1906. The different plants are running to their full capacity and 1908, it is expected, will prove a banner year in the sale of medium cost Adjustable Screens and Screen Doors. The company makes a specialty of shipping Screen Doors and Window Screens in collective distribution cars. Merchants can thus take advantage of a considerable saving in freight by purchasing their supply of Screen Doors, Window Screens and Window Screen Frames to be delivered in the company's distribution cars. In order that goods may be shipped in this manner, it is necessary that orders be placed through Hardware jobbers at as early a date as possible and specifications must be in the hands of the various factories represented by the company by February 15 to insure prompt delivery of the goods when wanted.

Catalogue of Stewart Iron Works Company.

THE STEWART IRON WORKS COMPANY, Cincinnati, Ohio, has issued its new catalogue, No. 36-A. It is a book of 120 pages, about 10 x 14 in. in size, and is attractively arranged and printed in two colors, meriting the title of decorative catalogue given it by the company. It shows many designs of Fence and Gates, Lawn and Drinking Fountains, Reservoir Vases, Settees, Tree Guards, Hitching Posts, Window Guards, Stable Fittings, Office and Balcony Railings, &c.

THE J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has prepared a number of attractive full page and half page, magazine size, mortised half-tone electrotypes, featuring hunting scenes. The full page electrotypes are 8 x 5½ in. in size, and the half page, 4 x 5½ in. These plates are intended for use on coated paper only and make a striking showing in illustrating a circular booklet. The mortised space allows room for the advertisement of any merchant who avails himself of these electrotypes. Provided the Hardware or Sporting Goods merchant will pay transportation charges the company will be glad to send gratis one of these electrotypes to any address.

CONTENTS.

	PAGE.
The Greene Self-Dumping Car Haul. Illustrated.....	337
A Society for the Prevention of Accidents.....	341
The Gridley Multiple Spindle Automatic. Illustrated.....	342
The Abandonment of the "Technolexicon".....	345
Customs Decisions.....	345
New Cam Cutting Machine. Illustrated.....	348
The Preservation of Steel in Concrete.....	348
New Heavy New Haven Lathes. Illustrated.....	348
Reductions in British Iron and Steel Prices.....	349
The Waltham Automatic Clock Gear Cutter. Illustrated...	350
The New Landis Staybolt Cutter. Illustrated.....	352
The Eberhardt Bros. No. 3 Spur Gear Cutter. Illustrated..	353
Gisholt Turret Lathe Work. Illustrated.....	354
The Napier Continuous Cutting Hack Saw. Illustrated....	355
Plating Small Articles with Brass.....	355
D'Amour's Improved 12-In. Sensitive Drill. Illustrated....	356
Westinghouse Motor-Driven Portable Lathe. Illustrated....	357
Increasing Use of Storage Batteries.....	357
The A-C Adjustable Collet Lathe Attachment. Illustrated..	358
Results with Iron Crucibles.....	358
Shafting Friction.....	358
The Hendershot Coupling. Illustrated.....	359
Patent and Trademark Legislation Proposed.....	360
The Application of Commodity Tariffs to Intermediate Points	360
A Notable Factory Power Plant.....	361
The Chicago Bench Miller. Illustrated.....	361
Editorial:	
Price Questions Go Back to Ore.....	362
New Ruling on Commodity Rates.....	363
Machinery Lists in Industrial Plants.....	363
Engineering Competition in the Navy.....	364
Personal	364
The Rate of Producing Iron and Its Prices.....	364
Meetings of Testing Society Committees.....	365
Decisions Against Labor Unions.....	365
The Machinery Club. Illustrated.....	366
Obituary. Portrait.....	368
The Wisconsin Mining Trade School.....	368
Proposed Pig Iron Contract.....	369
News of the Works:	
Iron and Steel.....	369
General Machinery.....	369
Power Plant Equipment.....	369
Foundries	369
Bridges and Buildings.....	369
Fires	369
Hardware	370
Miscellaneous	370
British Shipbuilding in 1907.....	370
Greatest Steel Corporation Earnings.....	371
Pig Iron Production in 1907.....	372
The National Metal Trades Association Meeting.....	372
The Iron and Metal Trades:	
A Comparison of Prices.....	373
Chicago	373
Pittsburgh	375
Birmingham	377
Philadelphia	377
Cincinnati	378
Cleveland	379
New York.....	380
Metal Market.....	380
Iron and Industrial Stocks.....	381
Factory Mutual Fire Insurance.....	381
The 1908 Meeting of the Testing Society.....	381
Interstate Commerce Commission Decisions.....	382
Trade Publications.....	382
The Machinery Trade:	
New York Machinery Market.....	383
Chicago Machinery Market.....	383
New England Machinery Market.....	384
Cincinnati Machinery Market.....	384
Cleveland Machinery Market.....	385
Philadelphia Machinery Market.....	386
Government Purchases.....	386
Industrial Education Meeting.....	387
Hardware:	
Condition of Trade.....	388
Notes on Prices.....	389
Lincoln's Birthday in the Hardware Store.....	391
National and Pennsylvania Mutual Fire Insurance Companies	391
Retail Hardware Conventions.....	392
A Good Grasp. Illustrated.....	393
Pacific Coast Hardware Organizations.....	393
Philadelphia Hardware Merchants' and Manufacturers' Association	393
Inland Empire Implement and Hardware Association..	394
National Board of Trade Opposes Parcel Post and Favors Penny Postage.....	396
Half a Century of Rope Making.....	397
Screen Doors and Window Screens.....	397
Catalogue of Stewart Iron Works Company.....	397
Ajax Hand Truck. Illustrated.....	398
Regal Flue Stop. Illustrated.....	398
Diamond Bit Stock Reamer Sets in Cases. Illustrated..	398
Wickless Hand Gas Lamp. Illustrated.....	399
The Missing Link. Illustrated.....	399
Krautter's Victor Plier No. 305. Illustrated.....	399
Vaughan & Bushnell Mfg. Company.....	399
Chain Link Wire Fence. Illustrated.....	400
Easywork Mop Wringer. Illustrated.....	400
Front Rank Gas Burners. Illustrated.....	401
New Revolver Bullet No. 360302. Illustrated.....	401
Current Hardware Prices.....	402

Ajax Hand Truck.

The Ajax Foundry & Machine Company, 136 Liberty street, New York, has recently put on the market the Ajax hand truck herewith illustrated. As shown there is a third swivel wheel which sustains the load, removes all weight from the operator's arms and necessitates only a push or pull and guidance of truck. Should progress be prevented by an obstruction the load is at rest until the right of way is clear, and no energy is wasted in sustaining the load. These advantages are obtained without sacrificing any possessed by standard trucks. The truck is made entirely of metal, the yoke, axle, piping and lip being of steel and the cross arm of malleable iron. It is strong, durable, light in weight and of large capacity. The axle turns in the bearings of the yoke, also the wheels upon the axle, which reduces friction to a minimum. The truck can be easily moved forward and backward, also turned around, even while supporting a heavy load. The handles are of such shape and size as to enable the workman to secure a good grip and without danger of the hands slipping. The truck is of a design that



Ajax Hand Truck with Third Wheel Attachment.

permits of making a wide range of sizes and styles. The illustration shows a truck 72 in. long from angle in lip to end of handles; yoke 22 in. wide, including wheel guards, and upper bar 20 in. wide, being about as large as will be regularly made, the sizes running from 72 in. to 48 in. The two large wheels are held on the axle with a collar, affording them good support on both sides. A pin extends through collar and axle. There is nothing extending beyond the rim of the wheels to hit obstructions in passing. The swivel wheel or caster is exceedingly strong, usually 4 in. in diameter by $2\frac{1}{2}$ in. face, and works well even where the surface is uneven. The third wheel fixture complete with clamps is furnished separate, to be affixed to the axle and cross arm of other trucks, old or new, which can be easily and quickly accomplished at trifling cost.

THE ZEPHYR VENTILATOR MFG. COMPANY, INC., Philadelphia, Pa., whose plant is located at Wayne Junction, has completed arrangements for a more rapid production of its patented Zephyr ventilator which was described in these columns some time since, and is now in position to produce 250 ventilators a day. The ventilators are made of heavy cold rolled sheet steel, practically all of the work, except the assembling, being done mechanically. The shearing, punching and pressing is done in a department particularly fitted for that class of work, six heavy machines of different sizes and types being used. Ten operations are required to bring the ventilator up to the point at which the electro plating, which consists of a heavy plating of copper, finished in antique bronze, is done. In the assembling department they are fitted with copper dust-proof screens, tested and packed for shipment. These ventilators are made entirely of metal and the construction work is all completed before the copper plating is

done, so that there is no possibility, the company states, of rusting. An automatic drain at the bottom of the ventilator carries off any rain, sleet or snow which may get through the outside screen and makes the ventilator practically self-cleaning. These ventilators are now made in three standard sizes: No. 1, for windows 26 to 32 in. wide; No. 2, for windows 32 to 38 in. wide, and No. 3, for windows 38 to 44 in. wide. For larger windows special sizes are made, while for factory buildings the larger ventilators are made from galvanized iron.

Regal Flue Stop.

The Regal flue stop, here shown, is the product of the Roseland Can & Specialty Company, Rockford, Ill. Its feature is that it is fitted with a fastening, which the company styles neverslip, made of flat spring wire. The fastenings are easily slipped in place, one across the



Regal Flue Stop.

other, as shown in the illustration, and make a rigid combination. The Stops are lacquered in brass effect, having center medallions of assorted colors and subjects. They are packed in small boxes measuring $8\frac{1}{4}$ x $1\frac{1}{2}$ in.

Diamond Bit Stock Reamer Sets in Cases.

The Whitman & Barnes Mfg. Company, Chicago, Ill., and New York, has recently adopted a special form of packing for its Diamond bit stock taper reamers in sets, one set of nine being here illustrated. The boxes in which these reamers are packed are of wood, dovetailed at corners, and have slide covers, the grooved or rounded bottom compartments holding one reamer each of the



Diamond Bit Stock Taper Reamers in Sets.

No. 50 set, $\frac{1}{4}$, 5-16, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, 9-16, $\frac{5}{8}$, 11-16 and $\frac{3}{4}$. Set No. 50 A, similarly made but smaller, holds one reamer each of $\frac{1}{4}$, 5-16, $\frac{3}{8}$, 7-16 and $\frac{1}{2}$ in. diameters, the outer dimensions of each in the order named being $7\frac{3}{4}$ x 8 x $1\frac{1}{2}$ in., and for the smaller set 7 x $3\frac{1}{2}$ x $1\frac{1}{4}$ in. The purpose of this arrangement is to provide a neat package for the merchant's shelves and a serviceable case in which the mechanic or user of the tools may keep them conveniently clean and free from dust. The sets are listed respectively \$6.80 and \$2.85 each, subject to trade discounts.

Wickless Hand Gas Lamp.

The Bridgeport Brass Company, Bridgeport, Conn., and 253 Broadway, New York, whose exclusive export agents are the North American Copper Company, 121 White street, New York, has just put out a new form of hand gas lamp for burning gasoline, here shown reduced size. It requires no chimney, there is said to be no smoke, smell, dirt or danger, and it is recommended by the company as both durable and inexpensive. The lamp has six small vapor jets, and when lighted is a practical hand gas lamp. It gives a clear light, has no wick, is not

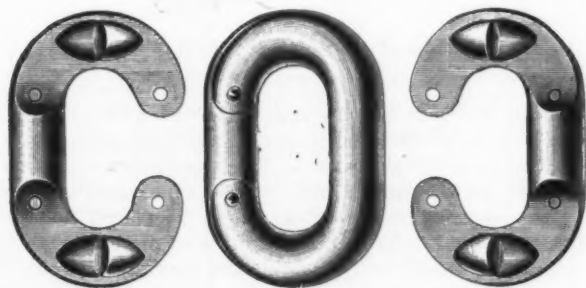


Wickless Hand Gas Lamp for Gasoline.

liable to get out of order, and is always ready for instant use. The outside of the lamp does not sweat or get greasy, gas is generated by merely holding a lighted match or taper under the burner, and there is no gas except when the flame vaporizes the liquid as it burns; the light being extinguished in the same way as with any ordinary lamp. The lamp is made entirely of brass, is well finished and packed six in a pasteboard box, a gross to the case. It is especially adapted for export trade, although serviceable anywhere.

The Missing Link.

The Thomas Laughlin Company, Portland, Maine, maker of an extensive line of ship chandlery and marine



The Missing Link.

hardware, is offering the chain repair Link, here illustrated. This style of link, made of malleable iron, has been on the market for many years, but the company has lately improved it by making it drop forged and adding an inter-locking lug in the end of the link as shown, thereby, it is said, nearly doubling the strength. The company claims that the link is stronger than chain of the same size and conforming to it, thus making it possible to secure the full strength in a repaired chain with a minimum of delay and expense. In its price-list circular the company gives a table showing the result of government tests on drop forged and malleable links, indicating

a superiority of the illustrated Links with lug attachments for which a patent has been allowed.

Kraeuter's Victor Plier No. 305.

The Victor plier, illustrated in the accompanying views, is made by Kraeuter & Co., Newark, N. J. It is 7 in. long and is made of the best steel, such as is used for good side cutting pliers. It is described as a universal



Fig. 1.—Victor Plier, Showing Wire Cutter on Handle Side of Fulcrum.

plier, the upper jaw being built on such lines that it will push anything its entire length or width to the straight jaw, thus giving an unusually strong hold. In taking hold of any taper, three square or parallel, it will adjust itself, and the flat side always lays itself to the straight jaw. It will take in a pipe from $\frac{3}{8}$ to $1\frac{1}{4}$ in. in diameter, and in applying it to pipe the harder the press or

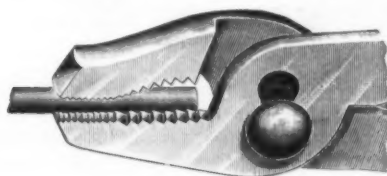


Fig. 2.—Victor Plier Taking a Rod.

pull the deeper the plier bites. The claim is made that owing to the position of the teeth the plier will not slip. The wire cutter is removed from the jaw and put on the handle side of the fulcrum (Fig. 1), thus giving increased leverage and making it possible to take hold, with the jaws, of a piece $\frac{3}{8}$ in. closer to the fulcrum. The lower part of the straight jaw has a V groove for holding

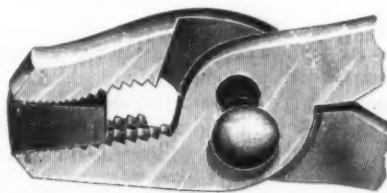


Fig. 3.—Victor Plier Taking a Taper.

wire and rods, Fig. 2. The manufacturers state that it will do all the work of a parallel plier and will take all tapers, as shown in Fig. 3, which a parallel plier will not. It is especially recommended for plumbers and steam fitters, as well as all other mechanics. The plier is offered nickel plated or black.

Vaughan & Bushnell Mfg. Company.

Referring to its new catalogue of hammers, recently issued, the Vaughan & Bushnell Mfg. Company, Chicago, Ill., calls attention to the fact that it has discontinued making certain lines of partially nickel plated hammers. It also announces that list prices on nickel plated plain face and bell face nail hammers are changed from those given in its 1905 catalogue, these lines being now full nickel plated all over. In ordering reference should be made to the new hammer catalogue and not to the former edition.

THE ANDERSON COUPLING COMPANY, Portland, Conn., is putting on the market the Anderson Turn-More wrench in a 6-in. size, and will follow it with an 8-in. wrench, making the sizes 6, 8 and 10 in. The Simplex Mfg. Company, New York, is the selling agent.

Chain Link Wire Fence.

The chain link woven wire fence, with steel posts, here illustrated, is manufactured and sold by Anchor Post Iron Works, 41 Park row, New York. It is especially designed for inclosing factory and industrial properties, reservoirs, public institutions, and the like. It is practically unclimbable; other advantages to which attention is especially called are its strength, durability,

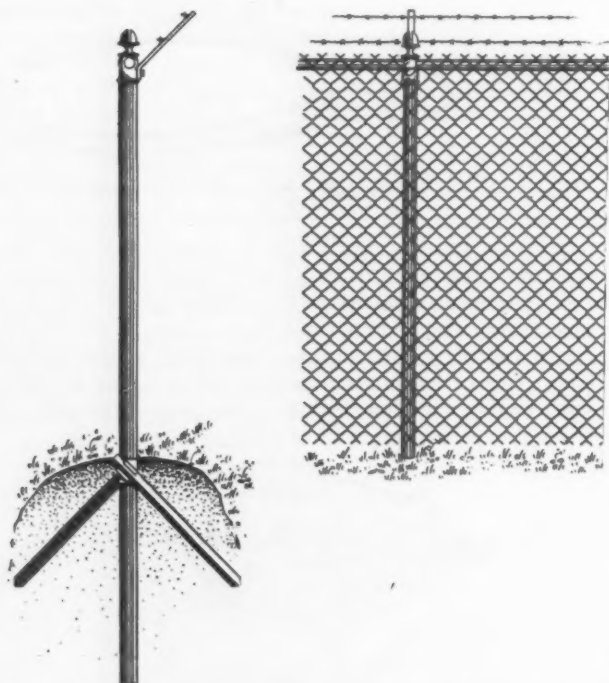


Fig. 1.—Section of Chain Link Wire Fence, with Side View of Post Showing Diagonal Arm on Top and Braces Below the Surface of the Ground.

economy of maintenance, admission of light and air and ease of erection. The posts are U-shaped bars of high carbon steel, galvanized to protect them against the elements. A diagram showing the appearance of the fence and the method of erecting and bracing the posts is given in Fig. 1. The post is driven into the ground, no digging being required, and after it is in position two blades or stakes of angle iron are driven through a socket clamped to the base of the post, thus forming an anchorage, having a considerable spread below the ground line, and securing the post against the action of frost or any strains to which the fence may be sub-

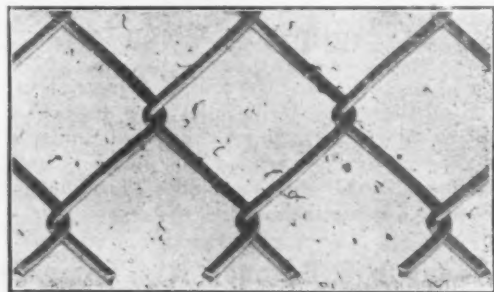


Fig. 2.—Reduced Reproduction of Chain Link Wire Netting, 2-In. Mesh, No. 6 Wire.

jected. The netting is the particularly new feature of this fence, being made of No. 6 wire of small mesh, about 2 in. in size, linked or woven together as shown in Fig. 2. The successful weaving of wire as heavy as this is referred to by the manufacturer as a noteworthy achievement. The netting, which is made in widths of 6, 7 and 8 ft., is securely stapled to the post and wired to a top rail of 1-in. standard pipe 1½-in. outside diameter. Above this are usually placed two or more strands of barbed wire. The netting itself is sharp on top, having no selvage, as shown in the cut, making it unclimbable. Thus it is claimed to fulfill all the requirements of a factory fence.

Easywork Mop Wringer.

The Burnham Specialty Company, Waterbury, Conn., is placing on the market the mop wringer illustrated in Fig. 1. It is made, the company explains, of the best and most durable material, all the parts except the wooden



Fig. 1.—Easywork Mop Wringer.

rollers being iron or steel, galvanized. Being of metal, it will not dry out or fall apart, and boiling water containing disinfectants or chemicals may be used without inconvenience or damage to operator or wringer. Pall and wringer are complete in one article, always ready for use. The bucket is square, with rounded corners, so that it is easy to keep clean. Inside the bucket is a guide which brings the mop against the stationary roller in compact form and makes the wringing effectual. The wringer is described as quick and easy of operation. The rollers are situated at either end of the pail, leaving ample room for access. When it is desired to bring them together to wring out the mop the foot is placed on the

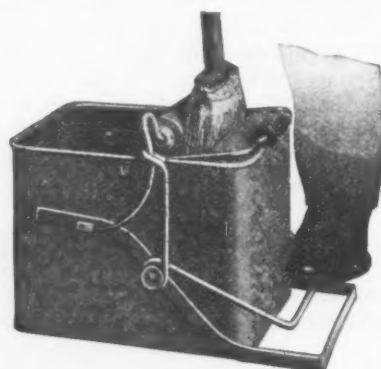


Fig. 2.—Withdrawing Mop from Wringer.

treadle, which is forced down to the brace below. When the foot is removed a spring brings the moving roller back to its original position. The treadle brace acts as a support for the bucket and keeps it from upsetting, even though the operator's entire weight be placed upon the treadle. Fig. 2 shows the operation of withdrawing the mop from the bucket. It is drawn upward between the rollers, leaving all water and dirt below the rollers and well below the surface of the bucket. The operator can wring the mop out partially or completely, as desired, by regulating the amount of pressure exerted by his foot upon the treadle.

H. S. BROWN, 2788 Marion avenue, New York, has invented a tool for removing rusty or corroded pens from the holder. Most persons who work at a desk have experienced more or less difficulty in this connection, and very often the fingers are cut with the sharp edges of the pen or soiled with rust and ink, necessitating a trip to the lavatory. This clever device has handles like pliers, by closing which the pen is gripped and then drawn out by a small trigger-like lever operated by the forefinger.

Front Rank Gas Burners.

The Haynes-Langenberg Mfg. Company, 4045-4057 Forest Park boulevard, St. Louis, Mo., maker of the

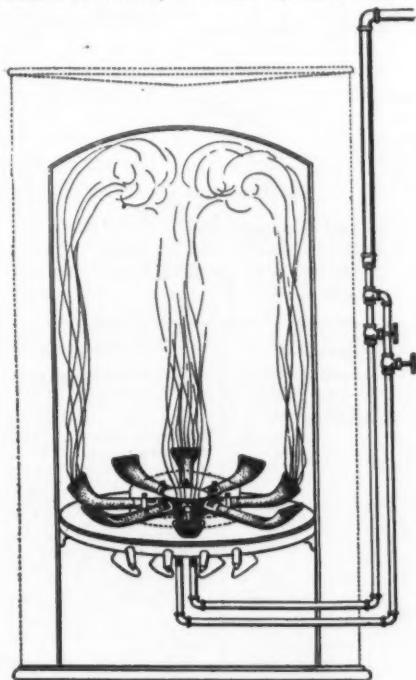


Fig. 1.—Front Rank Gas Burners.



Fig. 2.—Burner in Housing Complete.

Front Rank steel furnace, is offering the natural gas burners for use in warm air furnaces herewith illustrated.

In Fig. 1 the burner is shown as it appears complete in a furnace. The gas supply pipes pass through the ash pit door and connect with the central receiver, which is placed on top of the grate. The central receiver is enclosed in a housing, Fig. 2, through which the arms pass to the sides of the furnace. In Fig. 3 the interior of the central receiver is illustrated, showing the curved partition dividing the receiver into two chambers supplying alternate arms. In mild weather only one supply need be turned on, thus consuming but one-half the gas. Each

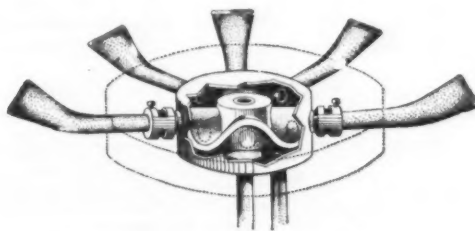


Fig. 3.—Interior of Central Receiver.

arm of the burner has a separate mixer, and each mixer is connected to the central receiver, and is entirely within the housing, causing the air and gas to be heated to the same temperature before passing out through the arms.

New Revolver Bullet No. 360302.

The Ideal Mfg. Company, New Haven, Conn., is offering the bullet here illustrated for short range for use in the Colt's New Army and Smith & Wesson's Military



New Revolver Bullet No. 360302.

revolvers. The bullets are very accurate, with 2½ grains of Du Pont's Bull's-Eye smokeless powder. It is claimed that this shape of bullet cuts a large clean hole in the target, thus insuring the marksman his full count.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

Animal, Fish and Vegetable Oils—	gal
Linseed, State and Western, raw	41 @ 42
City, Boiled	45 @ 46
City, Raw	44 @ 45
Raw, Calcutta, in bbls	70 @ 71
Lard, Extra Prime, Winter	71 @ 72
Extra No. 1	51 @ 52
No. 1	49 @ 50
Cotton-seed, Crude, f.o.b. mill	32 @ 33
Summer Yellow, prime	42 @ 43
Summer White	43 @ 44
Yellow Winter	46 @ 47
Sperm, Crude	59 @ 60
Natural Winter	72 @ 73
Bleached Winter	75 @ 76
Bleached Winter, Extra	76 @ 77
Tallow, Prime	59 @ 60
Whale, Crude	35 @ 36
Natural Winter	46 @ 47
Bleached Winter	49 @ 50
Extra Bleached Winter	52 @ 53
Menhaden, Brown, Strained	41 @ 42
Light Strained	41 @ 42
Northern	37 @ 38
Southern	37 @ 38
Cocanut, Ceylon	6 @ 7
Cochin	8 @ 9
Cod, Domestic, Prime	42 @ 43
Newfoundland	44 @ 45
Red, Elaine	42 @ 43
Saponified	5 @ 6
Olive, Yellow	65 @ 66
Neatsfoot, Prime	55 @ 56
Palm, Lagos	6 @ 7

Mineral Oils—

Black, 29 gravity, 25@30 cold test	13 @ 14
29 gravity, 15 cold test	13 @ 14
Summer	12 @ 13
Cylinder, light filtered	20 @ 21
Dark, filtered	18 @ 19
Paraffine, 903-907 sp. gravity	14 @ 15
903 sp. gravity	13 @ 14
883 sp. gravity	11 @ 12
Red	13 @ 14

Miscellaneous—

Barytes:	
White, Foreign	18.50 @ 20.50
Amer, floated	19.00 @ 20.00
Oil color	13.00 @ 16.50
China, in bulk	3.00 @ 3.40
China, Clay Imported	11.50 @ 18.00
Cobalt, Oxide	2.50 @ 2.60
Whiting, Commercial	42 @ 52
Gilders	55 @ 60
Ex. Gilders	60 @ 65

Putty, Commercial—

In bladders	1.70 @ 1.85
In bbls, or tubs	1.20 @ 1.45
In 1 lb to 5 lb cans	2.65 @ 2.85
In 12½ to 50 lb cans	1.50 @ 1.90

Spirits Turpentine—

In Oil bbls	55 @ 55½
In machine bbls	55½ @ 56

Glue—

Cabinet	12 @ 15
Common Bone	7½ @ 9
Extra White	18 @ 24
Fish, Liquid, 50 gal, bbls, per gal	60 @ 1.20
Foot Stock, White	12 @ 14
Foot Stock, Brown	9 @ 11
German Common Hide	10 @ 12
German Hide	12 @ 18
French	10 @ 40
Irish	13 @ 16
Low Grade	10 @ 12
Medium White	14 @ 17

Gum Shellac—

Bleached, Commercial	25 @ 26
Bone Dry	31 @ 32
Button	40 @ 50
Diamond L.	47 @ 48
Fine Orange	30 @ 35
A. C. Garnet	30 @ 31
G. A. L.	22 @ 23
Kala Button	20 @ 22
D. C.	49 @ 50
Octagon B.	38 @ 40
T. N.	26 @ 27
V. S. C.	43 @ 45

Colors in Oil—

Black, Lampblack	12 @ 14
Blue, Chinese	36 @ 46
Blue, Prussian	32 @ 36
Blue, Ultramarine	13 @ 16
Brown, Vandyke	11 @ 14
Green, Chrome	12 @ 16
Green, Paris	12 @ 15
Sienna, Raw	12 @ 21
Sienna, Burnt	12 @ 15
Umber, Raw	11 @ 14
Umber, Burnt	11 @ 14

White Lead Zinc, &c.—

Lead, English white, in Oil, 10% @ 10%	
Lead, American White:	
Lots of 500 lb or over, in Oil	6%
Lots less than 500 lb, in Oil	7%
Lead, White, in oil, 25 lb tin	7%
Lead, White, in oil, 12½ lb tin	7%
Lead, White, in oil, 1 to 5 lb	8%
Lead, American, Terms: On lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice.	

Zinc, American, dry	5½ @ 5%
Zinc, French:	
Antwerp, Red Seal, dry	10½
Antwerp, Green Seal, dry	10½
Paris, Red Seal, dry	8½
Paris, Green Seal, dry	10%

Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12½ @ 13%
Lots of less than 1 ton	13½ @ 13%
Discounts—French Zinc—Discounts to buyers of 10 bbl, lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	

Dry Colors—

Black, Carbon	6½ @ 7
Black Drop, American	3½ @ 8

Black Drop, English	5 @ 15
Black, Ivory	16 @ 20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @ 33
Blue, Prussian	29 @ 31
Blue, Ultramarine	3½ @ 15
Brown, Spanish	1½ @ 1
Carmine, No. 40	3.10 @ 3.25
Green, Chrome, ordinary	3½ @ 5
Green, Chrome, pure	17 @ 25
Lead, Red, bbls., ½ bbls., kegs	6%
Litharge, bbls., ½ bbls., kegs	6%
Ocher, American	2½ @ 3½
American Golden	2½ @ 3½
French	1½ @ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @ 11
French	11½ @ 12
German	10 @ 11
American	8½ @ 8½
Red, Indian, English	4½ @ 6
American	3 @ 3½
Red, Turkey, English	4 @ 10
Red, Tuscan, English	7 @ 10
Red, Venetian, Amer.	100 lb \$0.50 @ 1.25
English	100 lb \$1.15 @ 1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 9
American, Raw	1½ @ 2
American Burnt and Pow'd	1½ @ 2
Talc French	100 lb \$0.25 @ 0.25
American	100 lb \$0.50 @ 0.50
Terra Alba, French	100 lb 90 @ 1.00
English	100 lb 80 @ 1.50
American	100 lb 75 @ 80
American	100 lb 75 @ 80
Umber, They, Bnt. & Pow.	2½ @ 3
Burnt, American	1½ @ 2
Raw, American	1½ @ 2
Yellow Chrome, Pure	13 @ 15
Vermilion, American Lead	7 @ 25
Quicksilver, bulk	65 @ 65
Quicksilver, bags	66 @ 66
English, Imported	65 @ 67
Chinese	21 @ 21

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33%
North's.....10%
Zimmerman & Sons, Patents, Blind.....

Window Stop—

Ires' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.
Fernald Quick Shifter, 1/2 doz. pairs.....\$2.00@3.00

Anvils—American—

Eagle Anvils.....1/2 lb @ 8%
Hay-Budden, Wrought.....9%
Trenton.....1/2 lb 9% @ 9%

Imported—

Peter Wright & Sons, 1/2 lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11 1/2¢.

Anvil, Vise and Drill—
Millers Falls Co., \$15.00.....15% @ 10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—
Livingston Nail Co.....10%

Augers and Bits—

Com. Double Spur.....75 @ 80%
Jennings' Patn., Bright, 1/2 doz. 10 @ 70%
Black Lip or Blued.....65 @ 65%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40 @ 10%
Ford's Auger and Car Bits.....40 @ 5%
Ft. Washington Auger Co., Concord's.....35%
Forster Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25¢ @ 71%
No. 30, R. Jennings' list.....50%
Russell Jennings' list.....25 @ 10 @ 2%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....30%
Snell's Auger Bits.....40%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60%
Snell's King Auger Bits.....50%
Wright's Jennings' Bits.....60%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, 1/2 doz. \$38;
No. 2, \$18;
Ford's, Clark's Pattern.....65 @ 10%
C. E. Jennings & Co., Steer's Pat. 25%
Lavigne Pat., small size, \$18.00; large size, \$26.00.....60 @ 10%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00 @ 3.25
German Pattern, Nos. 1 to 10,
\$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$6.50 @ 7.00
Ames.....25 @ 10%
Universal.....20%

Ship Augers and Bits—

Ship Augers.....40 @ 10%
Ford's.....35 @ 5%
C. E. Jennings & Co.:
L'Hommedieu's.....6%
Watrous'.....33 @ 7%
Snell's.....40%

Awl Hfts—See Handles, Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75 @ 3.00
Unhlded, Shldered.....gro. \$3 @ 3.40
Unhanded, Patent.....gro. \$3 @ 3.40

Peg Awls—

Unhanded, Patent.....gro. \$1 @ 1.14
Unhlded, Shldered.....gro. \$3 @ 3.40
Scratch Awls:
Handled, Com.....gro. \$3.50 @ 4.00
Handled, Socket.....gro. \$1.15 @ 1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$1.75 @ 5.00
Second Quality.....\$1.25 @ 4.50

Double Bit, base weights:

First Quality.....\$7.00 @ 7.50
Second Quality.....\$6.50 @ 6.75

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar.....4 1/2 @ 5 ¢
Concord, Solid Collar.....4 1/2 @ 5 1/4 ¢
No. 1 Common, Loose.....3 1/2 @ 4 1/4 ¢
No. 1 1/2 Com., New Style.....4 1/2 @ 5 ¢
No. 2 Solid Collar.....4 1/2 @ 5 ¢

Half Patent:
Nos. 7, 8, 11 and 12.....65 @ 65 @ 10%
Nos. 13 to 14.....65 @ 65 @ 10%
Nos. 15 to 18.....70 @ 70 @ 10%
Nos. 19 to 22.....70 @ 70 @ 10%

Boxes, Axle—

Common and Concord, not turned lb., 5 @ 6 ¢
Common and Concord, turned lb., 6 @ 7 ¢
Half Patent.....lb., 9 1/2 @ 10 ¢

Bait—

Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20 @ 25%

Balances—

Sash—
Caldwell new list.....50%
Fullman.....50 @ 10 @ 60%

Spring—

Spring Balances.....50 @ 10 @ 60%
Chatillon's:
Light Spg. Balances.....50 @ 50 @ 10%
Straight Balances.....40 @ 40 @ 10%
Circular Balances.....50 @ 10%
Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Steel Crowbars, 10 to 40 lb., per lb., @ 8 1/2 @ 9 ¢
Towel.....

Beams, Scale—

Ecale Beams.....40%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.80;
Tinned.....\$0.85
No. 11 Wire Coppered 1/2 doz. \$1.15;
Tinned.....\$1.20
No. 10 Wire Tinned.....1/2 doz. \$1.50

Beaters, Egg—

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, \$0.80;
No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.55; No. 6, Jap'd, \$1.65;
Lyon, Jap'd, per doz., No. 2, \$1.35.

Taplin Mfg. Co.: Improved Dover, per gro. No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$35.00; No. 202, Tumbler Tin'd, \$35.00; No. 300, Mammoth, per doz., \$25.00.

Turner & Seymour Mfg. Co.: T. & S. Dover.....\$6.50

Bellows—

Blacksmith, Standard List.....
Split Leather.....60 @ 10 @ 65%
Grain Leather.....50 @ 50 @ 10%

Hand—

Inch. 6 7 8 9 10
Doz. \$5.00 5.50 6.00 6.50 7.50

Molders—

Inch. 10 12 14 16
Doz. \$7.50 9.00 12.00 15.00

Bells—

Cow—
Ordinary Goods.....75 @ 5 @ 75 @ 10 @ 5%
High grade.....50 @ 50 @ 10 @ 75%
Jersey.....75 @ 10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55 @ 10%

Hand—

Polished, Brass.....50 @ 10 @ 60%
White Metal.....50 @ 10 @ 50 @ 10 @ 5%
Nickel Plated.....50 @ 5%
Rising.....50 @ 5%
Cone's Globe Hand Bells.....33 @ 35%

Miscellaneous—

Farm Bells.....lb., 2 1/4 @ 2 1/4 ¢
Church and School.....60 @ 60 @ 5%

Belting—

Leather—
Extra Heavy, Short Lap.....60 @ 5%
Regular Short Lap.....60 @ 10 @ 5%
Standard.....70 @ 5%
Light Standard.....75%
Cut Leather Lacing.....40 @ 10%
Leather Lacing Sides, per sq. ft. 2 1/2 ¢

Rubber—

Agricultural (Low Grade).....
Common Standard.....75 @ 70 @ 5%
Standard.....70 @ 70 @ 5%
Extra.....60 @ 5 @ 60 @ 10%
High Grade.....50 @ 5 @ 50 @ 10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—

Tackle—
Common Wooden.....75%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50 @ 10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50 @ 10%; Wire Rope Snatch, 50%
Laws' Patent Automatic Lock and Junior.....30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed.....50%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Kenkel & Esser Co.....33 @ 45%

Boils—

Carriage, Machine, &c.—
Common Carriage (cut thread):
3/4 x 6 and smaller.....70 @ 5%
Larger and longer.....65 @ 5%
Phila. Eagle, \$3.00 list.....80 @ 5%
Bolt Ends.....65 @ 5%
Machine (Cut Thread):
3/4 x 4 and smaller.....70 @ 7 1/2 @ 5%
Larger and longer.....65 @ 5%
Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....3 4 5 6 8
Per doz. \$0.50 .55 .65 .80 .80
Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz.....\$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch.....6 8 10
Per doz.....\$1.00 1.40 1.85
Cast Iron Flat Shutter, Jap'd, Brass Knobs:
Inch.....6 8 10
Per doz.....\$0.75 .95 1.25
Wrought Barrel Jap'd.....80 @ 10%
Barrel Bronzed.....60 @ 10%
Spring.....70 @ 10 @ 70 @ 10 @ 10%
Shutter.....50 @ 5 @ 50 @ 10 @ 5%
Square Neck.....75 @ 75 @ 10%
Square.....70 @ 10 @ 10%
Ives' Patent Door.....55%
Ives' Wrought Metal.....45%

Expansion—

Richards Mfg. Co.....50 @ 10%
Steward & Romaine Mfg. Co.
Style No. 13, Double.....55%
Style No. 1, Single.....55%
Style No. 100, Dbl. Jaw, Single.....65%
Lag Screw.....65%

Plow and Stove—

Plow.....65 @ 5%
Stove.....65 @ 85 @ 5%

Tire—

Common Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila. list Oct. 16, '84.....80%
Eagle Phila. list Oct. 16, '84.....82 1/2%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila. list Oct. 16, '84.....80%
Eagle Phila. list Oct. 16, '84.....82 1/2%
Eclipse, list Dec. 28, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila. list Oct. '84.....80%
Eagle.....82 1/2%
Shelton Co.:
Tiger Brand, list Dec. 28, '99.....80%
Phila., Eagle, list Oct. 18, 1884.....82 1/2%
Upon Nut Co.:
Tire Bolts.....72 1/2%

Borers, Bung—

Borers Bung, Ring, with Handle:
Inch.....1 1/4 1 1/2 1 3/4 2
Per doz.....\$1.80 5.60 6.40 8.00
Inch.....2 1/4 2 1/2
Per doz.....\$3.65 11.50
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....25%
Langdon, New Langdon and Langdon Improved, 20¢ @ 10%; Langdon Acme.....15 @ 10%
Perfection.....40%
Seavey.....45%

Braces—

Common Ball, American.....\$1.50
Barber's.....50 @ 10 @ 60 @ 10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 130, \$1 to 123, 20¢ to 41¢
C. E. Jennings & Co.....50 @ 5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat.....50%
Millers Falls Drill Braces.....25 @ 10%
P. S. & W. Co., Peck's Pat. 60 @ 10%

Brackets—

Wrought Steel.....70 @ 10 @ 75 @ 10%
Bradley Metal Clasp.....80 @ 10 @ 80 @ 10 @ 5%
Griffin's Pressed Steel.....75 @ 75 @ 10%
Griffin's Folding Brackets.....70 @ 10%
Taplin Victor Handy Egg Beater Bracket.....1/2 doz. \$1.50

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75 @ 20%
Wire Goods Co.....75%

Buckets, Galvanized—

Mfg's list, price per gross.
Quart.....10 12 14
Water, Reg.....25.35 28.00 32.00
Water, Hcn.....45.35 48.00 52.00
Fire, Rd. Btm.....32.00 34.65 38.65
Well.....37.35 41.35 45.35

Bull Rings—See Rings, Bull

Butts—

Brass—
Wrought, High List, Oct. 26, '06, 55%
Cast Brass, Tiebout's.....45%
Cast Iron—
Fast Joint, Broad.....40 @ 10 @ 50%
Fast Joint, Narrow.....40 @ 10 @ 50%
Loose Joint.....70 @ 10 @ 75%
Loose Pin.....70 @ 10 @ 75%
Mayer's Hinges.....70 @ 70 @ 5%
Parliament Butts.....70 @ 70 @ 5%

Wrought Steel—

Light Narrow, Light Reversible.....
Reversible.....70 @ 5%
Reversible and Broad, 70 @ 5%
Loose Joint, Narrow, Light Inside Blind, &c.....70%
Back Flaps, Table Chest, 65% Japanned
Light Narrow, Loose Pin.....40 @ 5%
Light Narrow, Ball Tip.....60%
Broad.....40 @ 5%
Steeple Tipped.....70%
Ball Tipped.....70%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 30%
Hendryx Bronze: Series 700, 800, 30%
Hendryx Enameled.....35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per lb., 4 1/4 @ 4 3/4¢
Sharp, 1 prong, per lb., 4 1/4 @ 5 1/4¢
Burke's, Blunt, 4 @ 1 1/4¢; Sharp, 4 @ 1 1/2¢
Lautier, Blunt, 4 @ 1 1/4¢; Sharp, 4 @ 1 1/2¢
Perkins, Blunt, 1 lb., 3.5¢; Sharp, 4.15¢

Can Openers—

See Openers, Can.

Caps, Percussion—

Eley's B. B.52 @ 55¢
G. D.per M 54 @ 55¢
F. L.per M 40 @ 42¢
G. E.per M 48 @ 50¢
Musketper M 68 @ 65¢

Primers—

Berdan Primers, \$2 per M. 20¢5¢
Primer Shells and Bullets. 15¢10¢
All other primers per M. \$1.52 @ 1.60

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—**Blank Cartridges:**

32 C. F., \$5.5010¢5¢
38 C. F., \$7.0010¢5¢
32 cal. Rim, \$1.5010¢5¢
32 cal. Rim, \$2.7510¢5¢
B. B. Caps, Con. Ball, Sieged. \$1.90
B. B. Caps, Round Ball.\$1.49
Central Fire.25¢
Target and Sporting Rifle. 15¢5¢
Primed Shells and Bullets. 15¢10¢
Rim Fire, Sporting.50¢
Rim Fire, Military.15¢5¢

Casters—

Bed35¢10¢
Plate60¢5¢
Philadelphia70¢10¢
Acme, Ball Bearing.35¢
Gem (Roller Bearing). 70¢10¢10¢
Steel Gem.45¢
Standard Ball Bearing.45¢
Yale (Double Wheel) low list. 40¢10¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
3-16 1/4 6-16 3/4 7-16 1/2 9-16
\$8.77 6.17 5.02 4.57 4.37 4.27 4.22
3/8 3/4 7/8 to 1 1/4 to 1 1/2 inch.
\$4.17 4.07 4.02 4.12
In cash lots, deduct 25¢.

German Coil:
6-0 to 170¢5¢ @ 70¢10¢
2 and 360¢10¢ @ 60¢10¢45¢
4, 5 and 650¢10¢ @ 50¢10¢45¢

Halter—

Halter Chains60¢60¢5¢
German Pattern Halter Chains,
list July 24, '97.60¢10¢45¢
Covert Mfg. Co.35¢5¢
Halter35¢5¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/4-6-3, Straight, with ring. \$28.00
6 1/4-6-2, Straight, with ring. \$29.00
6 1/4-8-2, Straight, with ring. \$32.00
6 1/4-10-2, Strght, with ring. \$37.00
NOTE.—Add 20 per pair for Hooks.
Twist Traces: add per pair for Nos. 2
and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c. 60¢10¢ @ 60¢10¢5¢

Miscellaneous—

Jack Chain, list July 10, '93:
Iron60¢10¢
Brass60¢
Safety and Plumbers' Chain,
60¢10¢
Gal. Pump Chain.lb., 4 1/4¢
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stal-
lion40¢
Oneida Community:
Chains35¢2 1/2¢ @ 40¢
Niagara Dog Leads and Kennel
Chains45¢60¢5¢
Wire Goods Co.:
Dog Chain.70¢
Universal Dbl.-Jointed Chain.50¢

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.60¢
Pullman:
Bronze Chain, 60%; Steel Chain.
60¢10¢
Sash Chain Attachments, per set. 8¢
Aluminum Sash Ribbon, per 100
ft.\$1.25 @ 33.00
Sash Ribbon Attachments, per set. 8¢

Chalk—(From Jobbers.)

Carpenters' Blue.gro., 50¢55¢
Carpenters' Red.gro., 45¢50¢
Carpenters' White.gro., 40¢45¢

Checks, Door—

Hardley's45¢
Pullman, per gro.\$5.40
Russwin35¢5¢

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.50¢
Youths' Chests, with Tools.25¢
Gentlemen's Chests, with Tools.25¢
Farmers', Carpenters', etc., Chests,
with Tools.20¢
Machinists' and Pipe Fitters'
Chests, Empty.45¢
Tool Cabinets.45¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.7 1/2¢

Chisels—**Socket Framing and Firmer**

Standard List.75¢10¢ @ 70¢
Buck Bros.30¢
C. E. Jennings & Co.:
Socket Firmer No. 10.25¢7 1/2¢
Socket Framing No. 15.25¢7 1/2¢
Swain's67¢70¢
L. & I. J. White Co.30¢30¢5¢

Tanged—

Tanged Firmers.30¢5¢ @ 35¢
Buck Bros.30¢
C. E. Jennings & Co. Nos. 191, 181, 25¢
L. & I. J. White Co.25¢5¢

Cold—

Cold Chisels, good quality. 13¢15¢
Cold Chisels, fair quality. 11¢12¢
Cold Chisels, ordinary. 9¢10¢

Chucks—

Almond Drill Chucks.35¢
Almond Turret Six-Tool Chuck.40¢
Beach Pat., each \$8.00.35¢5¢
Empire25¢
Blacksmiths'25¢
Jacobs' Drill Chucks.35¢
Pratt's Positive Drive.25¢
Skinner Patent Chucks:
Independent Lathe Chucks.35¢
Universal, Reversible Jaws.35¢
Combination, Reversible Jaws.35¢
Drill Chucks, New Model, 25%:
Standard, 45%; Skinner Pat.,
25%; Positive Drive.40¢
Planer Chucks.35¢
Face Plate Jaws.35¢
Standard Tool Co.:
Improved Drill Chuck.45¢
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21.35¢
Scroll Combination, Nos. 83 and
8130¢
Geared Scroll, Nos. 33, 31 and 35. 25¢
Independent Iron, Nos. 18 and 318. 35¢
Independent Steel, No. 61.25¢
Union Drill, Nos. 000, 00, 100, 101,
102, 103, 104.35¢
Union Car Drill.25¢
Universal, 11, 12, 16, 17, 13, 14, 15, 40%
Universal, No. 42.35¢
Iron Face Plate Jaws, Nos. 28, 38,
48 and 50.35¢
Steel Face Plate Jaws, Nos. 70 and
7230¢
Westcott Patent Chucks:
Lathe Chucks.50¢
Little Giant Auxiliary Drill.50¢
Little Giant Double Grip Drill.50¢
Little Giant Drill, Improved.50¢
Oneida Drill.50¢
Scroll Combination Lathe.50¢
Whitaker Mfg. Co.:
National Drill.25¢

Clamps—

Adjustable Hammers.20¢20¢5¢
Carriage Makers', P., S. & W.
Co.50¢10¢
Resly, Parallel.33¢10¢
Myers' Hay Rack.45¢
Lineman's Swedish Neverturn.65¢
Wood Workers' Hammers.40¢10¢
Saw Clamps, see Vises, Saw Filers.

Cleaners, Drain—

Iwan's Champion, Adjustable.50¢
Iwan's Champion, Stationary.40¢

Sidewalk—

Star Socket, All Steel. 4 doz. \$4.05 net
Star Shank, All Steel. 4 doz. \$3.24 net
W. & C. Shank, All Steel. 4 doz.,
7 1/4 in., \$3.00; 5 in., \$3.25.

Cleavers, Butchers'—

Foster Bros.30¢
Fayette R. Plumb.30¢
L. & I. J. White Co.30¢

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each. \$10.75
20th Century Horse, each. \$5.00
Lightning Belt Horse, each. \$15.00
Chicago Belt Horse, each. \$20.00
Stewart's Enclosed Gear
Horse, each.\$4.75
Stewart's Patent Sheep Shear-
ing Machine, each.\$12.75
Stewart Enclosed Gear Shear-
ing Machine, No. 8, each. \$9.75

Clips, Axle—

Regular Styles, list July 1, '05.
80¢50¢10¢

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Bottling,
&c.70¢
Compression Bibbs. 60¢10¢ @ 70¢

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list.40¢
Leather, Walter B. Stevens & Son's
list.40¢

Compasses, Dividers, &c.

Ordinary Goods.70¢10¢ @ 75¢
Wm. Schollhorn Co.:
Excelsior Dividers.60¢
Lodi Dividers.70¢10¢

Conductor Pipe,—

L. C. L. to Dealers:
Galvanized Charcoal Copper.
Steel. Iron. 1 1/2, 1 3/4, 1 5/8, 2 oz.

Eastern:
70% 50¢17 1/2¢ 45¢
Central:
70% 55¢ 45¢
Western and Southern:
65¢10¢ 50¢24 1/2¢ 40¢5¢
So. Western
65¢5¢ 45¢5¢ 40¢24 1/2¢
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:
Gal.2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal.2 3 4 6 8
Each\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enameled.10¢
Agate Lined.10¢

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier. 2 1/2 @ 27¢; lighter
than 3 lb. to pair.26¢ @ 29¢

Cord—

Sash—
Braided, Drab.lb. 35¢
Braided, White, Com. Nos. 8
to 12, 23¢; No. 7, 23¢; No. 6,
24¢. In lots of 12 doz. or
over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18. 37¢
Italian, lb., A. No. 18, 24¢; B, 2¢
Common India.lb., 16¢11¢
Cotton Sash Cord, Twisted. 18¢ @ 20¢
Patent Russia.lb. 20¢
Cable Laid Russia.lb. 21¢
India Hemp, Br'd.lb. 21¢
India Hemp, Twisted.lb. 13¢ @ 14¢
Patent India, Twisted.lb. 17¢
Pearl Braided cotton, No. 8, 10, 12,
27¢; No. 7, 26¢; Nos. 8 to 12, 26¢
Edlystone, Braided, Nos. 8 to 12,
26¢; 7, 26¢; 6, 27¢.
Harmony Cable Laid Italian, Nos. 7
to 10.lb. 23¢ @ 24¢
Pulman:
Wash Sash Cord.10¢
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:

Braided, 1/2 lb. Drab Cotton,
55¢; Italian Hemp, 40¢ @
50¢; Linen, 65¢; White Cot-
ton, 50¢; Spot Cord.50¢
Massachusetts, White.lb. 40¢
Massachusetts, Drab.lb. 45¢
Phoenix, White, Nos. 8 to 12, 27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢;
B, Drab, 40¢; B, White, 35¢;
Italian Hemp, 40¢; Linen.57¢ @
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906.90¢ @ 90¢
Hendryx standard Wire Picture Cord,
old list. 85¢10¢
Turner & Stanton Co. Wire Picture
Cord85¢10¢

Cradles—

Grain40¢12 1/2¢

Crays—

White Round Crays, Cases, 100
gro., \$6.50 @ \$7.50 at factory, but
lower prices made by jobbers
Zeigler's Lumber.\$7.50
White and Purple, Indelible.\$7.50
Blue, Red, Green, Yellow and
Terra Cotta, \$6.50; Black.\$4.50
Giant Lumber, 5 1/4 in. x 15-16 in.
round, all colors, \$12.00; Indel-
ible, \$14.00; Blacks.\$10.00
Genuine Soapstone, Metal Workers',
5 in. x 1/4 in. Round, \$2.50; 5 in. x
3/4 in. Square, \$1.75; 5 in. x 3-16,
\$2.50; 5 in. x 1/4 x 3-16.\$3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, \$5.50;
Light\$5.00

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.50¢

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1817, 4 doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor4 doz. \$3.00
Wm. Rogers & Son.4 doz. \$2.50

Cutters—

H. H. Mayhew Co.40¢
Red Devil.60¢
B. Mfg. Co.40¢
Woodward50¢

Meat and Food—

American
Nos.401 402 403 404 405 406 407
Each\$5 \$7 \$10 \$12 \$25 \$50 \$60
Enterprise:
Nos.5 10 12 22 32
Each\$2 \$3 \$2.75 \$4.50 \$6 \$25 @ 25¢7 1/2¢
No. 202, \$1.50.40¢7 1/2¢
P. S. & W. Co.:
Dixon's4 doz. 33 1/2¢
Nos.1 2 3 4
Ideal\$11.00 \$17.00 \$19.00 \$30.00
Hales40¢ @ 40¢5¢
Little Giant.4 doz. 40¢50¢
Nos.303 310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
New Triumph No. 605, 4 doz. \$24.00,
40¢10¢
Russwin Food, No. 1, \$24.00; No. 2,
\$27.0045¢10¢ @ 50¢
Enterprise Beef Shavers.25¢30¢

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters.35¢
Corn Graters.30¢
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.4 doz. \$3.00
Combined Slaw Cutter and Corn
Grater4 doz. \$1.00

Tobacco—

All Iron, Cheap. doz. \$4.25 @ \$4.50
Enterprise25¢30¢
National, 4 doz., No. 1, \$21; No. 2,
\$1810¢

Diggers, Post Hole, &c.—

Disston's:
Rapid, 4 doz., \$24.00.25¢
Samson, 4 doz., \$34.00.25¢
Iwan's Improved Post Hole Auger. 40¢
Vaughan Pattern Post Hole Auger. 40¢
Perfection Post Hole Diggers, 4
doz.\$8.75
Split Handle Post Hole Diggers,
4 doz.\$7.75
Hercules Pattern, 4 doz.\$10.00
Kohler's, 4 doz., Universal, \$15.00;
Little Giant, \$12.00; Hercules,
\$10.00; Invincible, \$9.00; Rival,
\$8.50; Pioneer.\$7.50
Never-Break Post Hole Diggers, 4
doz., \$24.00.60¢

Dividers—See Compasses.**Drawing Knives—**

See Knives, Drawing.

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.35¢
Sterling Wheel Dresser Cutters.35¢

Drills and Drill Stocks—

Blacksmiths' Common Drilling
Machines.\$1.50 @ \$1.75
Breast, Millers Falls.15¢10¢
Breast, P. S. & W.33¢
Goodell Automatic Drills. 50¢10¢ @ 60¢
Millers Falls Automatic Drills. 33¢10¢
Hatchet, Curtis & Curtis.25¢
Hatchet, Parker's.40¢
Hatchet, Weston's.40¢
Hatchet, Weston's, Style H Im-
proved.40¢
Hatchet, No. 012.40¢
Hatchet, Celebrated.40¢
Hatchet, Whitney's, P. S. & W.50¢5¢
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00.33¢10¢

Twist Drills—

Bit Stock.60¢10¢ @ 70¢
Taper and Straight Shank.60¢10¢ @ 60¢10¢5¢

Drivers, Screw—

Screw Driver Bits, per doz. 45¢ @ 50¢
Balsey's Screw Holder and Driver, 4
doz., 2 1/2-in., \$6; 4-in., \$7.50; 6-in.,
\$9.50¢
Buck Bros' Screw Driver Bits.30¢
Champion70¢
Disston's70¢
Fray's Hol. H'dle Sets, No. 3, \$12.50;
Ford's Brace Screw Drivers.40¢10¢
Gay's Double Action Ratchet.35¢
Goodell's Auto.65¢65¢10¢
Mayhew's Black Handle.40¢
Mayhew's Monarch.40¢
Millers Falls, Nos. 20 and 21. 25¢10¢
Millers Falls, Nos. 11, 12, 41, 42. 15¢10¢
Smith & Hemenway Co. Never-
turn, 66%; Elmora, 60%; Star,
30¢10¢
Swan's:
Nos. 7565 to 7568, 50%; No. 7540,
40¢10¢

Eave Trough, Galvanized—

Territory. L. C. L. Galvanized
Galv. Charcoal Copper.
Steel. Iron. 1 1/2, 1 3/4, 1 5/8, 2 oz.

Eastern:
75¢5¢ 60¢10¢ 45¢
Central:
75¢10¢ 65¢ 45¢
Western and Southern:
75¢ 60¢5¢ 40¢5¢
So. Western:
70¢10¢ 55¢7 1/2¢ 42 1/2¢

Terms.—2% for cash. Factory ship-
ments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.85¢ @ 85¢10¢
No. 26.30¢
No. 21.25¢
No. 22.10¢
Copper60¢10¢

Elbows, Stove Pipe—

Edwards, Standard Blue.40¢10¢ @ 10¢
Edwards, Royal Blue.40¢10¢ @ 10¢
Reeves, Dover, one piece.40¢10¢

Emery, Turkish—

4 to 5 1/2 to
16: 220: Flour.
Kepslb. 5¢ 5 1/4¢ 5 1/2¢
1 1/2 Kepslb. 5 1/4¢ 5 1/2¢ 5 3/4¢
1 1/4 Kepslb. 5 1/2¢ 5 3/4¢ 6¢
10-lb. cans,7¢ 8¢
10 in case,6 1/2¢ 7¢ 8¢
10-lb. cans, less
than 10.10¢ 10¢ 8¢
Less quantity. 10¢ 10¢ 8¢
NOTE.—In lots 1 to 3 tons a discount
of 10% is given.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....40&10%
Upson's Patent.....40%

Cord and Weight—

Ives and Titan.....33%
Corrugated—

Acme Corrugated Fasteners.....70%

Faucets—

Cork Lined.....50&10&60%
Metallic Key, Leather Lined.....60&10&70%

Red Cedar.....40&50&40&10&65%
Petroleum.....70&10&75%

R. & L. B. Co.:.....60&10%
Star.....60%
West Lock.....50&10%

John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.....50&10%
John Sommer's Duplex Metal Key.....60%
John Sommer's Diamond Lock.....40%
John Sommer's L. X. L. Cork Lined.....50%
John Sommer's Reliable Cork Lined.....50&10%

John Sommer's Chicago Cork Lined.....60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....40%
John Sommer's Perfection, Cedar.....40%
Self Measuring:

Enterprise, # doz. \$36.00.....40&10%
Lane's, # doz. \$36.00.....40&10%
National Measuring, # doz. \$36.40&10%

Felloe Plates—

See Plates, Felloe.

Files— Domestic—

List Nov. 1, 1899.

Best Brands.....70&10&75&10%
Standard Brands.....75&10&80%
Lower Grade.....75&10&80&10%

Imported—

Stubs' Tapers, Stubs' Hat, July 24, '97.....33 1-30&40%

Fixtures, Fire Door—

Allith Underwriters' Approved.....50%
Richards Mfg. Co.:.....40&50&10&5%
Universal, No. 103; Special, No. 104.....\$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch.....15 17 19 21
Per doz.....\$3.60 3.85 4.15 4.65
P. S. & W. Co.:.....25%
According to Hardware Co.:.....60%

Fedder Squeezers—

See Compressors.

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&20%
Victor, Manure.....60&20%
Victor, Header.....60&20%
Champion, Hay.....60&20%
Champion, Header.....60&20%
Champion, Manure.....60&15&20%
Columbia, Hay.....60&20%
Columbia, Spading.....70&12%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Jackson Steel Barley.....60&20%
Kansas Header.....60%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Wood Saw—

White, 8'g't Bar, per doz. 75@80¢
Red, 8'g't Bar, per doz. 1.00@1.15
Red, Dbl. Brace, per doz. 1.40@1.50

Freezers, Ice Cream—

Qt.1 2 3 4 5 6
Each.....\$1.25 1.60 1.90 2.20 2.50 2.80

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse— Per 1000 Feet.

Hemp.....\$2.75
Cotton.....3.80
Waterproof Sgl. Taped.....3.65
Waterproof Dbl. Taped.....4.40
Waterproof Tpl. Taped.....5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....75@80%

Gauges—

Marking, Mortise, &c. 50@50&10%
Chapin-Stephens Co.:.....50&10%
Marking, Mortise, &c. 67%
Diston's Marking, Mortise, &c. 33%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P. S. & W. Co.:.....33%

Gimlets— Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.30
Spike, Metal, No. 1, \$4.00; 2, \$4.30
Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60
Spike, Wood Handled, No. 1, \$1.30; 2, \$1.60

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co.:.....65@65&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush.....25&10&30%
Elwell's.....40%

Grease, Axle—

Common Grade.....gro. \$6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, # doz., 1 lb., \$1.20;
2 lb.....\$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.:.....33%@33%&10%

Grinders—

Royal Mfg. Co.:
Alumund Grinding Machines, each,
Nos. 01, \$1.75; 1A, \$2.50; 10,
\$5.00.....30%
Alumund Sickle Grinders, each,
Nos. 20, \$5.00; 20A, \$6.00; 20A
Combined, \$6.50.....30%
Alumund Disc Grinders, each,
\$2.50.....30%

Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones, #
inch, # doz., \$2.00.....33%
Richards Mfg. Co., Eli and Cycle,
Ball Bearing, mounted.....40%

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....60&50&60&10%
Covert Mfg. Co.:
Web.....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oueida Community:
Am. Coll and Halters.....40&10&5%
Am. Cow Ties.....45&60%
Niagara Coll and Halters.....45&50&5%
Niagara Cow Ties.....45&50&60&10&5%

Hammers—

Handled Hammers—
Heller's Machinists'.....55&10&55&10&5%
Heller's Farriers'.....40&50&40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers'.....10&10&5%
Riveting.....50%
Machinists', revised list.....60&5%
Blacksmiths'.....50&5%
Payette H. Plumb:
A. E. Nail.....40&2%&40&12%
Eng. and B. S. Hand.....50&10&5&60&5%
Machinists' Hammers.....60&60&10%
Rivet and Tinner's.....40&7%&40&12%&5%

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢.....80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢.....80&10%
Over 5 lb., per lb., 30¢.....80&10&10%

Handles—

Agricultural Tool Handles
Acc. Pick, &c.....60&10&60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins.....40%
Champion.....50%
Diston's.....50%

Mechanics' Tool Handles—

Auger, assorted.....gro. \$3.00@3.50
Brad Axl.gro. \$1.65@1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, \$2.40@
\$2.65; Hickory.....\$2.15@2.40
Socket Firming, Apple, \$1.75@
\$1.95; Hickory.....\$1.60@1.75
Socket Framing, Hickory,
\$1.60@1.75
File, Ass'd.....gro. \$1.30@1.40
Hammer, Hatchet, &c.
60&10&60&10&5%
Hand Saw, Varnished, doz.
80&85¢; Not Varnished.....45@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted, 75¢
Fore, doz. 45¢; Fore, Bolted, 90¢
Chapin-Stephens Co.:
Carring Tool.....30@30&10%
Chisel.....60@60&10%
File and Axl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Hatchet Auger
Handles.....15&10%
Nicholson Simplicity File Handle.....
gro. \$0.85@1.50
W. A. Zelnicker Supply Co.:
Hammer, # doz., 12 in., \$2.00;
14 in., \$2.00; 16 in., \$2.30; 18
in., \$2.50; 20 in., \$2.70; 22 in.,
\$3.00; 24 in., \$3.30; 26 in., \$3.50;
30 in., \$3.80.
Sledge, # doz., oval, 30 in.,
\$3.80; octagon, 30 in., \$3.80;
oval, 36 in., \$4.00; octagon,
36 in., \$4.00.
Axe, # doz., 28 to 34 in., \$5.60;
doz., \$5.80.
Adze, # doz., 36 in., \$5.80; 38
in., \$7.80.
Pick, # doz., R. R., 36 in.,
\$8.00; coal, 34 in., \$5.80.
Hatchet, # doz., 12 to 14 in.,
\$2.00.

Hangers—

Myers' Patent Gate Hangers, # doz.
net.....\$4.50

Joist and Timber—

Lane Bros. Co.:.....30%

Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, # doz.....60%

Hatchets—

Regular list, first qual. 40&2%
Second quality.....50&5@

Heaters, Carriage—

Clark, No. 5 \$1.75; No. 5B, \$2.00; No.
3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00;
No. 3E, \$3.25; No. 1, \$3.50.....25%
Clark Coal, # doz., \$0.75.....20%

Hinges—

Blind and Shutter Hinges

Surface Gravity Locking Blind:
(Victor; National; 1868 O. P.;
Niagara; Clark's O. P.;
Clark's Tip; Buffalo.)
No.1 3 5
Doz. pair.....\$0.75 1.35 2.70
Mortise Shutter:
(L. & P., O. S., Acme, &c.)
No.1 1 1/2 2 1/2
Doz. pair.....\$0.70 .65 .60 .55
Mortise Reversible Shutter (Buf
falo, &c.):
No.1 1 1/2 2
Doz. pair.....\$0.70 .45 .60 .60
North's Automatic Blind Fixtures,
No. 2, for Wood, \$9.00; No. 3, for
Brick, \$11.50.....10%
Charles Parker Co.:.....70&75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind
Hinges.....20%

Chicago Spring Butt Co.: Friction.....25% Oscillating.....25% Big Twin.....25% Chisholm & Moore Mfg. Co.: Baggage Car Door.....50% Elevator.....30% Railroad.....50% Cronk & Carrier Mfg. Co.: Loose Axle.....60&2% Loose Axle.....70&2% Griffin Mfg. Co.: Solid Axle, No. 10, \$12.00.....60&10% Roller Bearing, No. 11, \$15.00, Roller Bearing, Ex. Hy. No. 22, \$18.00.....60&10% Bull Dog, \$24.00.....70% Lane Bros. Co.: Parlor, Ball Bearing, \$1.00; Standard, \$1.15; No. 105, \$2.85; New Model, \$2.80; New Cham- pion, \$2.25 Barn Door, Standard.....60&10% Hinged.....net \$6.08 Covered.....60&5% Special.....70&5% Lawrence Bros.: Advance.....55&10% Cleveland.....70&7% Clippert, No. 75.....60% Crown, No. 40.....net \$6.50 Cyclone, No. 50.....net \$7.50 Tandem, No. 50.....net \$7.50 New York.....55&10% McKinney Mfg. Co.: Roller Bearing, Nos. 1 and 2.70% Anti-Friction.....60% Hinged Hangers, King Charm.....60% Richards Mfg. Co.: Hangers, Nos. 47, 48, 147, 247, 60&5% Pioneer Wood Track, No. 3, \$2.25 Roller B'g St'l Track No. 12, \$2.20 Roller B'g St'l Track No. 13, \$2.50 Roller B'g, Nos. 39, 41, 43, 70&7% Hero, Adj. Track No. 19, 50&10% Adjustable Track Tandem Trol- ley Track No. 16.....50&10% Seal, Steel Track No. 8.....\$2.25 Auto Adj. Track No. 22.....50&5% Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.25; No. 121, \$2.45; No. 130.....\$2.50 Safety Underwriters F. D. No. 101.....50% Tandem No. 41, 2 1/2 and 3 60&10% P. lace, Adjustable Track No. 133.....50&5% Royal, Adjustable Track No. 122.....50&10% Iret Wood Track No. 1.....\$2.25 Trolley B. D. No. 20.....50&10% Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28.....\$1.60 Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7% Anti-friction, No. 42; No. 40, sizes 2 1/2 and 3.....60% Hinged Tandem No. 48.....60&5% Folding Door B. B. Swivel No. 135.....40% Taylor & Boggs Fy Co.'s Kid- der's Roller Bearings.....50&15&10&5% Myers' Stayon Hangers.....60%

Hangers— Garment—

Pullman Trouser, # gro., 1 pair Flat
Aluminum, \$9.00; 1 pair Round Nickel-
ealed, \$9.00; 1 pair Round Nickel-
ealed, \$9.00; 1 pair Flat Gun Metal, \$12.00;
1 pair Flat Black Enamelled, \$7.50;
1 pair Wood Clamp, \$13.50; Skirt
Hangers, Folding, per gro., \$21.00;
Coat Hangers, Folding, per gro.,
\$9.00; Garment Hanger Rods, Round
Nickel, per gro., \$10.50; Garment
Hanger Loops, Round Nickel,
per gro.....\$10.50
Victor Folding.....# gro. \$9.00

Gate—

Myers' Patent Gate Hangers, # doz.
net.....\$4.50

Joist and Timber—

Lane Bros. Co.:.....30%

Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, # doz.....60%

Hatchets—

Regular list, first qual. 40&2%
Second quality.....50&5@

Heaters, Carriage—

Clark, No. 5 \$1.75; No. 5B, \$2.00; No.
3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00;
No. 3E, \$3.25; No. 1, \$3.50.....25%
Clark Coal, # doz., \$0.75.....20%

Hinges—

Blind and Shutter Hinges

Surface Gravity Locking Blind:
(Victor; National; 1868 O. P.;
Niagara; Clark's O. P.;
Clark's Tip; Buffalo.)
No.1 3 5
Doz. pair.....\$0.75 1.35 2.70
Mortise Shutter:
(L. & P., O. S., Acme, &c.)
No.1 1 1/2 2 1/2
Doz. pair.....\$0.70 .65 .60 .55
Mortise Reversible Shutter (Buf
falo, &c.):
No.1 1 1/2 2
Doz. pair.....\$0.70 .45 .60 .60
North's Automatic Blind Fixtures,
No. 2, for Wood, \$9.00; No. 3, for
Brick, \$11.50.....10%
Charles Parker Co.:.....70&75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind
Hinges.....20%

Chicago Spring Butt Co.: Friction.....25% Oscillating.....25% Big Twin.....25% Chisholm & Moore Mfg. Co.: Baggage Car Door.....50% Elevator.....30% Railroad.....50% Cronk & Carrier Mfg. Co.: Loose Axle.....60&2% Loose Axle.....70&2% Griffin Mfg. Co.: Solid Axle, No. 10, \$12.00.....60&10% Roller Bearing, No. 11, \$15.00, Roller Bearing, Ex. Hy. No. 22, \$18.00.....60&10% Bull Dog, \$24.00.....70% Lane Bros. Co.: Parlor, Ball Bearing, \$1.00; Standard, \$1.15; No. 105, \$2.85; New Model, \$2.80; New Cham- pion, \$2.25 Barn Door, Standard.....60&10% Hinged.....net \$6.08 Covered.....60&5% Special.....70&5% Lawrence Bros.: Advance.....55&10% Cleveland.....70&7% Clippert, No. 75.....60% Crown, No. 40.....net \$6.50 Cyclone, No. 50.....net \$7.50 Tandem, No. 50.....net \$7.50 New York.....55&10% McKinney Mfg. Co.: Roller Bearing, Nos. 1 and 2.70% Anti-Friction.....60% Hinged Hangers, King Charm.....60% Richards Mfg. Co.: Hangers, Nos. 47, 48, 147, 247, 60&5% Pioneer Wood Track, No. 3, \$2.25 Roller B'g St'l Track No. 12, \$2.20 Roller B'g St'l Track No. 13, \$2.50 Roller B'g, Nos. 39, 41, 43, 70&7% Hero, Adj. Track No. 19, 50&10% Adjustable Track Tandem Trol- ley Track No. 16.....50&10% Seal, Steel Track No. 8.....\$2.25 Auto Adj. Track No. 22.....50&5% Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.25; No. 121, \$2.45; No. 130.....\$2.50 Safety Underwriters F. D. No. 101.....50% Tandem No. 41, 2 1/2 and 3 60&10% P. lace, Adjustable Track No. 133.....50&5% Royal, Adjustable Track No. 122.....50&10% Iret Wood Track No. 1.....\$2.25 Trolley B. D. No. 20.....50&10% Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28.....\$1.60 Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7% Anti-friction, No. 42; No. 40, sizes 2 1/2 and 3.....60% Hinged Tandem No. 48.....60&5% Folding Door B. B. Swivel No. 135.....40% Taylor & Boggs Fy Co.'s Kid- der's Roller Bearings.....50&15&10&5% Myers' Stayon Hangers.....60%

Hangers—

Myers' Patent Gate Hangers, # doz.
net.....\$4.50

Joist and Timber—

Lane Bros. Co.:.....30%

Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, # doz.....60%

Hatchets—

Regular list, first qual. 40&2%
Second quality.....50&5@

Heaters, Carriage—

Clark, No. 5 \$1.75; No. 5B, \$2.00; No.
3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00;
No. 3E, \$3.25; No. 1, \$3.50.....25%
Clark Coal, # doz., \$0.75.....20%

Hinges—

Blind and Shutter Hinges

Surface Gravity Locking Blind:
(Victor; National; 1868 O. P.;
Niagara; Clark's O. P.;
Clark's Tip; Buffalo.)
No.1 3 5
Doz. pair.....\$0.75 1.35 2.70
Mortise Shutter:
(L. & P., O. S., Acme, &c.)
No.1 1 1/2 2 1/2
Doz. pair.....\$0.70 .65 .60 .55
Mortise Reversible Shutter (Buf
falo, &c.):
No.1 1 1/2 2
Doz. pair.....\$0.70 .45 .60 .60
North's Automatic Blind Fixtures,
No. 2, for Wood, \$9.00; No. 3, for
Brick, \$11.50.....10%
Charles Parker Co.:.....70&75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind
Hinges.....20%

Chicago Spring Butt Co.: Friction.....25% Oscillating.....25% Big Twin.....25% Chisholm & Moore Mfg. Co.: Baggage Car Door.....50% Elevator.....30% Railroad.....50% Cronk & Carrier Mfg. Co.: Loose Axle.....60&2% Loose Axle.....70&2% Griffin Mfg. Co.: Solid Axle, No. 10, \$12.00.....60&10% Roller Bearing, No. 11, \$15.00, Roller Bearing, Ex. Hy. No. 22, \$18.00.....60&10% Bull Dog, \$24.00.....70% Lane Bros. Co.: Parlor, Ball Bearing, \$1.00; Standard, \$1.15; No. 105, \$2.85; New Model, \$2.80; New Cham- pion, \$2.25 Barn Door, Standard.....60&10% Hinged.....net \$6.08 Covered.....60&5% Special.....70&5% Lawrence Bros.: Advance.....55&10% Cleveland.....70&7% Clippert, No. 75.....60% Crown, No. 40.....net \$6.50 Cyclone

D. & H. Scovill.....27 1/2%
Am. Fork & Hoe Co. (Scovill Pat-
tern).....60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit.....\$3.20
Ft. Madison Cotton Hoe.....70%&10%
Ft. Madison Crescent Cultivator Hoe.....70%&10%
Ft. Madison Mattock Hoe.....70%&10%
Regular Weight.....70%&10%
Junior Size.....70%&10%
Ft. Madison Sprouting Hoe.....70%&10%
Ft. Madison Dixie Tobacco Hoe.....70%&10%
Kretzinger's Cut Easy.....70%&10%
W. & C. Ivanhoe.....70%&10%
B. B. 6 in. Cultivator Hoe.....\$3.40
B. B. 6 in. Cultivator Hoe.....\$3.50
Vine Weeding.....70%&10%
W. & C. L'ning Shuffie Hoe.....70%&10%

Holisting Apparatus—
See *Machines, Hoisting.***Holders—Bit—**

Angular, 7 doz. \$24.00.....45%&10%
Door—
Bardley's, Iron, 40%; Brass and
Bronze.....25%
Empire.....50%
Pullman.....35%
Richards Mfg. Co., No. 117, Ever-
ready, 40%; Nos. 118, 119, Sure
Grip.....50%
Superior.....33 1/2%

File and Tool—

Nicholson File Holders and File
Handles.....33 1/2%&40%

Fruit Jar—

Triumph Fruit Jar Holder, 7 gross,
\$10.80; 7 doz. \$1.25

Trace and Rein—

Fernald Double Trace Holder, 7 doz.,
pairs.....\$1.25
Dash Rein Holder, 7 doz. pairs.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swat,
50%; German.....33 1/2%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45%&20%
Coat and Hat, Wrightsville.....60%&5%
Harness, Reading List.....40%

Wire—

Belt.....80%
Wire C. & H. Hooks.....75%
Bradley Metal Clasp Wire, Coat and
Hat, 70%&10%; Chain.....70%&10%
Columbian Wire, Co. Gem.....70%&5%
Parker Wire Goods Co., King, 70%&10%
Wire Goods Co.:
Acme, 60%&10%; Chief, 70%; Crown,
75%; Czar, 65%; V. Brace, 75%;
Czar Harness, 50%&10%.

Wrought Iron—

Box, 6 in., per doz., \$1.90; 8 in.,
\$1.25; 10 in., \$2.50.
Cotton.....doz. \$1.05@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods*

Miscellaneous—

Hooks, Bench, see *Stops, Bench*.
Brush, Light, doz., \$6.20; Medium,
\$6.75; Heavy, \$7.65
Grass, best, all sizes, per doz. \$3.00
Grass, common grades, all sizes,
per doz.....\$1.50
Whiffletree.....lb. 5%&6%
Hooks and Eyes:
Brass.....60%&60%&10%
Malleable Iron.....70%&70%&10%
Covers Mfg. Co. Gate and Scuttle
Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks.....
70%&10%
Turner & Stanton Co., Cup and
Shoulder.....80%&10%
Bench Hooks—See *Bench Stops*.
Corn Hooks—See *Knives, Corn*.

Horse Nails—**See Nails, Horse.****Horseshoes—****See Shoes, Horses.****Hose, Rubber—**

Garden Hose, 3/4-inch:
Competition.....ft. 5@6¢
3 ply Guaranteed.....ft. 8@9¢
4-ply Guaranteed.....ft. 10@11¢
Cotton Garden, 3/4-in., coupled:
Low Grade.....ft. 8@9¢
Fair Quality.....ft. 10@11¢

Irons—Sad—

From 4 to 10.....lb. 3@3 1/2¢
B. B. Sad Irons.....lb. 3 1/4@3 1/2¢
Mrs. Potts', cents per set:
Nos. 50 55 60 65
Jap'd Tops.....83 80 93 91
Tint'd Tops.....88 85 98 95
New England Pressing.....lb. 3 1/4@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60%&10%;
Corner.....60%

Pinking—

Pinking Irons.....doz. 60¢
Irons, Soldering
See *Coppers*.

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30%&2%; Steel, 45%
Lockport.....50%

Lane's Steel.....30%&5%
Richards' Tiger Steel, No. 130.....50%&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks.....50%

Kettles—

Brass, Spun, Plain.....80%&25%
Enameled and Cast Iron—See *Ware*,
Hollow.

Knives—

Butcher, Kitchen, &c.—
Foster Bros. Butcher &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut
Brand Knives and Hooks.....60%
Washington Acme.....70%
Dent, \$2.75; Adj. Serrated, \$2.20;
Serrated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.

Drawing—

Standard List.....75¢@75¢&10%
C. E. Jennings & Co., Nos. 45, 46,
25¢&7 1/2%
Jennings & Griffin, Nos. 41, 42,
66¢&7 1/2%
Swan's.....66¢&7 1/2%
Watrous.....16%
L. & I. J. White.....20%&25%

Hay and Straw—

Serrated Edge, per doz. \$3.50@5.75
Iwan's Sickle Edge.....70%
Iwan's Serrated.....70%
Miscellaneous—
Farriers'.....doz. \$3.00@3.25
Wostenholm's.....70%

Knobs—

Base, 2 1/2-inch, Birch, or Maple,
Rubber Tip.....gro. \$1.25@1.40
Carriage, Jap., all sizes.....
gro. 40¢@45¢
Door, Mineral.....doz. 65¢@70¢
Door, Por. Jap'd.....doz. 70¢@75¢
Door, Por. Nickel.....doz. \$2.05@2.15
Bardley's Wood Door, Shutters, &c. 15%

Lacing, Leather—
See *Beltting, Leather*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladies, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40%&10%
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....doz. \$4.35@4.50
Side Lift, No. 0.....doz. \$4.60@4.75
Hinge Globe, No. 0.....doz. \$4.60@4.75
Other Styles.....40¢@40¢&10%

Bull's Eye Police—

3-inch.....\$4.25@4.50

Latches—Thumb—

Roggins' Latches, with screw.....
doz. 35¢@40¢

Door—

Allith Mfg. Co., Reliable and Alle-
gator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101,
70%
Richards' Bull Dog, Heavy, No. 125,
50%&5%
Richards' Trump, No. 127.....\$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%;
Sisal, 20%.

Leathers, Pump—

See *Pumps*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet.....\$2.50 2.25 2.00
75 feet.....\$2.10 1.80 1.65
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3, 40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,
\$7.50.
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3 1/2, \$1.50; No. 4,
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
No. 4 1/2, \$4.50.
Tent and Awning Lines: No. 5
White Cotton, \$7.50; Drab Cotton,
\$8.50.
Clothes Lines, White Cotton: 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25.
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and
Awning Lines.....40%
Clothes Lines White Cotton.....20%
Shade Cord, Cotton or Linen.....20%

Locks—Cabinet—

Cabinet Locks.....33 1/2%
Door Locks, Latches, &c —
*NOTE.—Net prices are very often made
on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and
Brass.....75%&10%

Sash, &c.—

Ives' Patent
Bronze and Brass, 55%&5%; Crescent,
60%; Iron, 60%; Window Ventilating,
40%&20%; Robinson Pat. Ventilating
Sash Lock, 33 1/2%.

Pullman Patent Ventilating Lock.....35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Up'r't, without Augers.....
\$2.00@2.25
Com. Ang'l'r, without Augers.....
\$2.25@2.50

Swan's Improved.....40%&10%
Jennings, Nos. 1 and 4.....25¢&7 1/2%
Mellers' Falls.....5.75
Snell's, Upright, \$2.65; Angular, \$2.90

Corking—

Reisinger Invariable Hand Power.....
7 doz. \$18.00

Fence—

Williams' Fence Machines.....each, \$5.50

Holisting—

Moore's Anti-Friction Chain Hoist.....30%
Moore's Hand Hoist, with Lock.....20%
Moore's Cyclo, High Speed Chain
Hoist.....25%

Ice Cutting—

Chandler's.....12 1/2%

Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....\$37.00
Boss Rotary.....\$37.00
Champion Rotary Banner No. 1.....\$37.00
Standard Champion No. 1.....\$37.00
Standard Perfection.....\$37.00
Cincinnati Square Western.....\$33.00
Uneda American, Round.....\$33.00

Mallets—

Hickory.....45¢@50¢
Lignumvitae.....45¢@50¢
Tinnors' Hickory and Apple-
wood.....doz. 45¢@50¢

Mangers, Stable—

Sweet Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.....50%

Mattocks—

See *Picks and Mattocks*.

Milk Cans—See Cans, Milk.**Mills, Coffee, &c.—**

Enterprise Mfg. Co.....20¢@25¢
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria.....33 1/2%
Parker's Box and Side.....50%&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....all sizes, \$1.50@2.00
Cheap.....all sizes, \$2.00@2.50
Better Grade.....all sizes, \$2.50@4.50
12 14 16 18 in.

High Grade.....\$4.50 4.75 5.00 5.25
Continental.....60%
Great American.....70%
Great American Ball B'g, new list.....70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing.....50%&10%&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33 1/2%&3%
Pennsylvania Pony.....40%&3%
Granite State:
Style A, Low Wheel.....70%
Style B, High Wheel.....70%
Style C, High Wheel, spl. list.....70%&10%
Philadelphia:
Style M, S. C. K. T.....70%&10%&5%
Style A, all Steel.....60%&10%&5%
Style B, High Wheel.....70%&10%&5%
Drexel and Gold Coin, special list.....40%
Horse.....40%&5%
Pony.....40%&5%
36-in. Horse.....30%&10%
Eagle Horse.....30%&5%
I. X. L. Horse.....50%

Nails—
Wire Nails and Brads, Miscel-
laneous.....57 1/2¢@87 1/2¢&10%
Cut and Wire, See *Trade Report*.
Hungarian, Finishing, Upholster-
ers' &c. See *Tacks*.

Horse—

Anchor.....23 21 20 19 18.....40%&5%
Coleman.....13 12 11 11.....net
New Haven.....23 21 20 19 18.....40%&5%
Livingston.....19 18 17 16 16.....10%
Western.....15 14 13 12.....10%
Jobbers' Special Brands.....
per lb. 9¢@10¢

Picture—

Brass H'd 1/2 55 60 70 .. gro
Por. Head.. 1.10 1.10 1.10 .. gro

Nippers—

See *Pliers and Nippers*.

Nuts—

Cold Punched: Off list.
Square, Blank or Tapped.....4.80¢
Hexagon, Blank or Tapped.....5.10¢
Square, B'K, C. T. & R.....5.10¢
Hexagon, B'K, C. T. & R.....5.70¢
Not Punched:
Square, Blank.....5.30¢
Hexagon, Blank.....5.70¢
Square, Tapped.....5.20¢
Hexagon, Tapped.....5.60¢

Oakum—

Rest.....lb. 6 1/2¢
U. S. Navy.....lb. 6¢
Navy.....lb. 5¢
Plumbers' Spun Oakum.....2¢@3¢

Oil Tanks—See Tanks, Oil.**Oilers—**

Steel, Copper Plated.....75%
Chase or Paragon:
Brass and Copper.....50¢@10%
Zinc.....65¢@10%

Malleable, Hammers' Improved, Nos.
11, 12 and 13, 20%; Old Pattern, Nos.
1, 2, 3, 50%.

American Tube & Stamping Co.:
Spring Bottom Cans.....70¢@70¢&10%
Railroad Oilers, &c.....60¢@60¢&10%

Openers—Can—Per doz.

Sprague, Iron Handle.....30¢@35¢
Sprague, Wood Handle.....35¢@40¢
Sardine Scissors.....\$1.75@3.00
Yankee Can and Bottle Opener,
7 doz., net, \$0.75; Little Gem,
7 doz., net.....\$0.65

Egg—

Hartigan Nickel Plate, 7 doz., \$2.00;
Silver Plate, \$4.00.

Packing—
Asbestos Packing, Wick and
Rope.....20¢@25¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....11¢@12¢
Sheet, C. O. S.....11¢@12¢
Sheet, C. B. S.....12¢@13¢
Sheet, Pure Gum.....40¢@45¢
Sheet, Red.....40¢@50¢
Jenkins' '96, 7 lb. 50¢.....25%

Miscellaneous—

American Packing.....lb. 7¢@10¢
Cotton Packing.....lb. 16¢@25¢
Italian Packing.....lb. 9¢@12 1/2¢
Jute.....lb. 4¢@4 1/2¢
Russia Packing.....lb. 8¢@11¢

Pails, Water, Well, &c.—**See Buckets.****Pans—Dripping—**

Standard List.....65¢@7 1/2¢&70%
Edwards, Royal Blue.....65¢@7 1/2%

Fry—

Common Lipped:
Nos. 1 2 3 4 5
Per doz. \$0.75 0.80 0.90 1.10 1.30
Refrigerator, Galva.....
Inch.....12 14 16 18
Per doz.....\$1.75 2.25 2.80 3.15

Paper—Building Paper

Asbestos.....lb.
Roll Board or Building Felt,
6 to 30 lb., per 100 sq. ft. 13 1/2¢@5¢
Roll Board or Building Felt,
3-32 and 1/4 in., 45 to 60 lb.,
per 100 sq. ft.....6¢
Mill Board, Sheet, 40 x 40 in.,
1-32 to 1/2 in.....3¢@5¢

Rosin Sized Sheathing: 500 sq. ft.

Light weight, 25 lbs. to roll.....
48¢@58¢
Medium weight, 30 lbs. to roll.....
56¢@70¢
Heavy weight, 40 lbs. to roll.....
75¢@78¢

Black Water Proof Sheathing:

500 sq. ft., 1 ply, 65¢; 2 ply,
85¢; 3 ply, \$1.10; 4 ply, \$1.25.
Defensing Felt, 9, 6 and 4 1/2 sq.
ft. to lb. ton.....\$5.50
Red Rope Roofing, 250 sq. ft.,
per roll.....\$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.....
\$35.00@38.00
2 ply, roll 108 sq. ft.....65¢
3 ply, roll 108 sq. ft.....88¢
Slater's Felt (roll 500 sq. ft.).....80¢

Sand and Emery—

Flint Paper and Cloth.....50¢@10¢
Garnet Paper and Cloth.....25¢
Emery Paper and Cloth.....50¢@60¢

Parers—Apple—

Goodell Co.:
Family Bay State.....7 doz. \$15.00
Improved Bay State.....7 doz. \$36.00
New Lightning.....7 doz. \$7.00
Turn Table '98.....7 doz. \$6.00
White Mountain.....7 doz. \$5.00
Bonanza Improved.....each \$7.50
Dandy.....each \$10.00
Eureka Improved.....each \$20.00
New Century.....each \$20.00
Ranger.....each \$25.00

Livingston Nail Co.:

Daisy.....7 doz. \$1.00
Little Star.....7 doz. \$5.00
Rocking Table.....7 doz. \$6.20

Reading Hardware Co.:

Advance.....7 doz. \$4.00
Baldwin.....7 doz. \$4.00
Reading 72.....7 doz. \$3.25
Reading 78.....7 doz. \$6.25

Potato—

Saratoga.....7 doz. \$7.00
White Mountain.....7 doz. \$6.00

Picks and Mattocks—

List, Feb. 23, 1899, 70¢@10¢@70¢&5¢
Cronk's Handled Garden Mattock,
7 doz., No. 2, \$2.60; No. 3, \$4.40.

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass 50¢ @ 50¢ & 10%
 Iron, list Nov. 11, '85. 60¢ @ 60¢ & 10%

Pipe, Cast Iron Soil—

Standard, 2-6 in. 60¢ @ 10¢
 Extra Heavy, 2-6 in. 70¢ @ 10¢
 Fittings, Standard and Heavy,
 75¢ @ 10¢

Pipe, Merchant—

Consumers, Carloads.		Steel.		Iron.	
		Bk. Galv.	Bk. Galv.		
1/4 & 1/2 in. 64	48	57	41		
3/4 in. 66	52	59	41		
1 in. 68	56	61	49		
3/4 to 6 in. 72	62	66	56		
7 to 12 in. 69	84	61	46		

Pipe, Vitrified Sewer—

Carload lots.
 Standard Pipe and Fittings, 3
 to 24 in., f.o.b. factory:
 First-class 82%
 Second-class 85%

Pipe, Stove—

Per 100 joints.		C. L.		L. C. L.	
Edwards' Nested:					
5 in., Standard Blue.....	\$6.25		\$7.25		
6 in., Standard Blue.....	7.75		8.75		
7 in., Standard Blue.....	7.75		8.75		
5 in., Royal Blue.....	7.00		8.00		
6 in., Royal Blue.....	7.50		8.50		
7 in., Royal Blue.....	8.50		9.50		
Wheeling Corrugating Co.'s Nested:					
5 in., Uniform Color.....	\$6.15		\$7.15		
6 in., Uniform Color.....	6.65		7.65		
7 in., Uniform Color.....	7.65		8.65		

Planes and Plane Irons—**Wood Planes—**

Bench, first qual. 30¢ @ 30¢ & 10%
 Bench, second qual. 40¢ @ 40¢ & 10%
 Molding 25¢ @ 25¢ & 10%
 Chapin-Stephens Co.:
 Bench, First Quality..... 30%
 Bench, Second Quality..... 40%
 Molding and Miscellaneous..... 25%
 Toy and German..... 30%
 Union 60%

Iron Planes—

Chaplin's Iron Planes..... 50¢ @ 10%
 Union 60%

Plane Irons—

Wood Bench Plane Irons, list
 Dec. 12, '06. 25%
 Buck Bros. 30%
 Chapin-Stephens Co. 25%
 Union 60%
 L. & I. J. White 30¢ @ 25%

Planters, Corn, Hand—

Kohler's Eclipse..... 40¢ doz. \$3.00

Plates—

Felice 10¢ @ 14¢

Pliers and Nippers—

Button Pliers..... 75¢ @ 75¢ & 10¢
 Gas Burner, per doz., 5 in., \$1.25
 @ \$1.50; 6 in., \$1.45 @ \$1.50.
 Gas Pipe..... 7 8 10 12-in.
 \$2.00 \$2.25 \$2.75 \$3.50
 Acme Nippers..... 50¢ & 5%
 Cronk & Carrier Mfg. Co.:
 American Button..... 80%
 Improved Button..... 75¢ @ 10%
 Cronk's 60%
 No. 80 Linemen's..... 50%
 Stub's Pattern..... 45%
 Combination and others..... 53%
 Heller's Farmers' Nippers, Pincers
 and Tools..... 40¢ @ 10¢ & 10%
 P., S. & W. Tinnars' Cutting Nip-
 pers..... 40%
 Wm. Schollhorn Co.:
 Bernard, 35%; Elm City, 35%;
 Paragon, 50%; Lodi, 55%.
 Swedish Side, End and Diagonal Cut-
 ting Pliers..... 60%
 Utica Drop Forge & Tool Co.:
 Pliers and Nippers, all kinds..... 40%

Plumbs and Levels—

Chapin-Stephens Co.:
 Plumbs and Levels..... 30¢ @ 30¢ & 10%
 Chapin's Imp. Brass Cor. 40¢ @ 40¢ & 10%
 Pocket Levels..... 30¢ @ 30¢ & 10%
 Extension Sights..... 30¢ @ 30¢ & 10%
 Machinists' Levels..... 40¢ @ 40¢ & 10%
 Distons' Plumbs and Levels..... 60¢ @ 10%
 Distons' Pocket Levels..... 60¢ @ 10%
 Stanley's Duplex..... 35%
 Woods' Extension..... 35%

Points, Glaziers'—

Bulk and 1-lb. papers..... 10¢ 9¢ @ 6¢
 1/2-lb. papers..... 10¢ 9¢ @ 6¢
 1/4-lb. papers..... 10¢ 9¢ @ 6¢

Police Goods—

Manufacturers' Lists..... 25¢ @ 10¢ & 5%
 Tower's 25%

Polish—Metal, Etc—

Prestoline Liquid, No. 1 (1/4 pt.) 40¢
 doz. \$3.00; No. 2 (1 qt.), \$9.00. 40%
 Prestoline Paste..... 30%

George William Hoffman:
 U. S. Metal Polish Paste, 3 oz.
 boxes, 50¢ doz.; 50¢ doz. \$4.50;
 1 lb boxes, 50¢ doz. \$1.25; 1 lb
 boxes, 50¢ doz. \$2.25.
 U. S. Liquid, 8 oz. cans, 50¢ doz.
 \$1.25.
 Barkeepers' Friend Metal Polish, 50¢
 doz., \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb cans,
 50¢ doz. \$4.50;
 Black Eagle, Liquid, 1/2 pt. cans,
 50¢ doz. 75¢
 Black Jack Paste, 1/4 lb cans, 50¢ doz. \$3.00
 Ladd's Black Beauty Liquid, per
 100 tins..... 50¢
 Joseph Dixon's, 50¢ gr. \$5.75..... 10%
 Dixon's Plumbago..... 50¢
 Fireside 50¢
 Gem, 50¢ gr. \$1.50..... 10%
 Japanese 50¢
 Jet Black 50¢
 Peerless Iron Enamel, 10 oz. cans,
 50¢ doz. \$1.50

Poppers, Corn—

1 qt. Square..... doz. \$0.88; gro. \$8.75
 1 qt. Round..... doz. \$1.00; gro. \$10.00
 1 1/2 qt. Square..... doz. \$1.10; gro. \$11.00
 2 qt. Square..... doz. \$1.35; gro. \$13.50

**Post Hole and Tree Au-
g-ers and Diggers—**

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢;
 6 ft., 46¢; 6 1/2 ft., 46¢.
 Steel Hitching Posts..... each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enamelled 35¢ @ 10%
 Tinned 30¢ @ 10%

Powder—

In Canisters:
 Duck, 1 lb..... each 45¢
 Fine Sporting, 1 lb..... each 75¢
 Rifle, 1/2 lb..... each 15¢
 Rifle, 1 lb..... each 25¢
 In Kegs:
 12 1/2-lb. kegs..... \$3.50
 25-lb. kegs..... \$4.50
 King's Semi-Smokeless:
 Keg (25 lb bulk)..... \$6.50
 Half Keg (12 1/2 lb bulk)..... \$3.50
 Quarter Keg (6 1/4 lb bulk)..... \$1.90
 Case 24 (1 lb cans bulk)..... \$8.50
 Half case (1 lb cans bulk)..... \$4.50
 King's Smokeless:
 Keg (25 lb bulk)..... \$12.00
 Half Keg (12 1/2 lb bulk)..... 6.25
 Quarter Keg (6 1/4 lb bulk)..... 3.25
 Case 24 (1 lb cans bulk)..... 14.00
 Half case 12 (1 lb c. bk.)..... 7.25

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co..... 20¢ @ 25%

Seal Presses—

Morrill's No. 1, 50¢ doz., \$20.00..... 50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail—

Cyclops
 Miller's Falls, No. 3, 50¢ doz., \$12.00..... 60%
 Morrill's No. 1, Nail Puller, 50¢ doz.
 \$20.00..... 50%
 Pearson No. 1, Cyclone Spike Puller,
 each \$30.00..... 50%
 The Scranton Co. Case Lots:
 No. 2B (large)..... \$5.50
 No. 3B (small)..... \$5.00
 Smith & Hemenway Co.:
 Diamond B..... 70%
 Giant 50%
 Staple Puller, Utica and Davi-
 son 60%

Pulleys, Single Wheel—

Inch 1/2 1 1/2 2 3
 do. \$0.50 .45 .60 1.05
 Hay Fork, Steel or Solid Eye.
 doz., 1/2 in., \$1.25; 5 in., \$1.55
 Inch 2 1/2 1 1/2 1
 Hot House, doz. \$0.65 .85 1.80
 Inch 1 1/2 1 1/2 1 1/2
 Screw, doz. \$0.16 .19 .25 .30
 Inch 1 1/2 1 1/2 1 1/2
 Side, doz. \$0.25 .40 .55 .80
 Inch 1 1/2 1 1/2 1 1/2

Sash Pulleys—

Common Frame; Square or
 Round End, per doz, 1 1/2 and
 2 in. 17¢ @ 20¢
 Auger Mortise, no Face Plate,
 per doz., 1 1/2 and 2 in. 20¢ @ 21¢
 Acme, No. 35, 1 1/2 in., 19¢; 2 in., 20¢
 American Pulley Co.:
 Wrought Steel American Plain
 Axle 50¢ @ 10%
 Wrought Steel, Eagle..... 17¢ @ 20¢
 Fox-All-Steel, Nos. 3 and 1, 2 in.....
 Grand Rapids All Steel Noiseless..... 50%
 Niagara, No. 25, 1 1/2 in., 19¢; 2 in.,
 No. 26, 1 1/2 in., 14¢; 2 in., 16¢
 Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢
 Tackle Blocks—See Blocks.

Pumps—

Cistern 60%
 Pitcher Spout..... 75¢ @ 75¢ & 10%
 Wood Pumps, Tubing, &c..... 80%
 Barnes Dbl. Acting (low list)..... 40¢ & 5%
 Barnes Pitcher Spout..... 75¢ @ 10%
 Contractors' Rubber Diaphragm No.
 3 B. & L. Rock Co..... \$16.00
 Daisy Spray Pump..... 40¢ doz. \$6.50

Flint & Walling's, Fast Mail Hand,
 (low list)..... 50%
 Flint & Walling's Fast Mail (low
 list)..... 50%
 Flint & Walling's Tight Top Pitcher..... 75¢ @ 10%
 National Specialty Mfg. Co., Measur-
 ing, Nos. 2, \$6.00; 3, \$5.50..... 30%
 Myers' Pumps (low list)..... 40¢ & 5%
 Myers' Power Pumps..... 40¢ & 5%
 Myers' Spray Pumps..... 40¢ & 5%

Pump Leathers—

Plunger and Valve Leathers—Per
 gro.:
 No. 2 2 1/2 3 3 1/2 4
 \$3.10 3.70 4.35 4.95 5.60
 Cup Leathers—Per 100:
 Inch 2 1/2 3 3 1/2 4
 \$3.50 4.75 6.20 8.80

Punches—

Saddlers' or Drive, good.....
 doz. 50¢ @ 75¢
 Spring, single tube, good qual-
 ity \$1.75
 Revolving (1/2 tubes)..... doz. \$3.60
 Bemis & Call Co.'s Cast St'l Drive..... 50%
 Morrill's Nos. 1AA, 1A, 1B, 10,
 1D, \$15.00..... 50%
 Hercules, 1 die, each \$5.00..... 50%
 Niagara Hollow Punches..... 40%
 Niagara Solid Punches..... 55¢ @ 10%
 Wm. Schollhorn Co.:
 Belt and Ticket, Bernard, 35%;
 Paragon, 50%; Lodi..... 55%
 Timmers' Hollow, P., S. & W. Co. 40%
 Timmers' Solid, P., S. & W. Co. 40%
 doz., \$1.44..... 40%

Rail—Barn Door, &c.—**Sliding Door, Painted Iron.....**

1 1/2 in., 1b., 36¢ 30%
 Allith Mfg. Co.: Reliable Hanger
 Track 50%
 Cronk's:
 Double Braced Steel Rail..... 3/4 ft. 3/4¢
 O. N. T. Rail..... \$3.12
 Griffin's:
 xxx, 100 ft., 1 x 3-16 in., \$3.25;
 1 1/2 x 3-16 in., \$3.75;
 Hinged Hanger, 100 ft., 1 x 3-16
 in., \$3.50; 1 1/2 x 3-16 in., \$4.00.
 Lane's:
 Hinged Track, 100 ft. \$3.45
 O. N. T., 100 ft., 1 in., \$3.00; 1 1/2
 in., \$3.45; 1 1/2 in., \$4.00.
 Standard, 1 1/2 in., 100 ft. \$4.00
 Lawrence Bros.:
 1 x 3-16 in., 100 ft., \$7.50; 1 1/2 x
 3-16 in., \$8.75..... 55¢ & 7%
 McKinney's:
 Hinged Hanger Track, 50 ft., 1 1/2,
 60¢ @ 5%
 1 x 3-16 Track..... 55¢ @ 7%
 Myers' Stayon Track..... 60¢ @ 5%
 Richards' Mfg. Co.:
 Common, 1 x 3-16 in., \$3.00; 1 1/2 x =
 3-16, \$3.25; 1 1/2 x 3-16, \$3.50.
 Special Hinged Hanger Rail..... 60¢ @ 10%
 Lag Screw Rail, No. 65..... 50%
 Gauge Trolley Track, No. 31,
 No. 50, 32, 14¢; No. 33, 20¢
 Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64,
 \$4.00; 45, \$3.25; 46, \$3.50; 49, No. 1,
 \$3.25; 49, No. 2, \$3.50.

Rakes—

NOTE.—Many goods are sold
 at net prices.

Fort Madison Red Head Lawn..... \$3.25
 Fort Madison Blue Head Lawn..... \$2.70
 Cronk's:
 Steel Garden: Champion, 75%;
 Ideal, 80%; Victor..... 80¢ @ 25%
 Queen City Lawn, 50¢ doz., 20 teeth,
 \$2.85; 24, \$3.90..... net
 Anticlog Lawn, 50¢ doz..... \$4.00
 Malleable Garden..... 70¢ @ 10%
 Ideal Steel Garden, 50¢ doz. 12 teeth,
 \$15.00; 14, \$16.00; 16, \$18.00..... 80%
 Kohler's:
 Lawn Queen, 20-tooth..... 40¢ doz. \$3.15
 Lawn Queen, 24-tooth..... 40¢ doz. \$3.25
 Paragon, 20-tooth..... 40¢ doz. \$2.70
 Paragon, 24-tooth..... 40¢ doz. \$2.75
 Steel Garden, 14-tooth..... 40¢ doz. \$2.40
 Malleable Garden, 14-tooth, 40¢ doz.
 \$2.00 @ 2.25

Rasps, Horse—

Distons' 75%
 Heller Bros. 70¢ @ 70¢ & 10%
 Liveright Bros' Gold Medal 70¢ @ 75%
 McCaffrey's American Standard,
 60¢ @ 10% & 5%
 New Nicholson..... 70¢ @ 10% & 75%
 See also Files.

Razors—

Liana Bo-ras-ic..... 60%
 Fox Razors, 50¢ doz. \$2.00; 40¢ doz. \$1.50;
 No. 44, \$20.00; No. 42, Platina, 40%
 \$25.00.
 Red Deril..... 65%

Reels, Fishing—

Hendryx:
 M. 6, 6 A, 6 B, 6 M, 6 M 16,
 M 6, 6 A, 6 B, 6 M, 6 M 16, 4008 Rubber,
 Populo, Nickered Populo..... 20%
 Aluminum, German Silt., Bronze..... 25%
 1240 N, 124 N, 6 RM, G 9..... 25%
 3004 N, 06 N, 6 RM, G 9..... 25%
 4 N, 6 PN, 24 N, 26 PN..... 20%
 2204 P, 334 P, 2204 PN, 334 P, 0224 PN,
 334 P, 02084 N, 334 P, 02294 PN,
 334 P, 002 N, 334 P..... 25%
 986 PN, 2204 N, 974 PN..... 25%
 5009 PN, 5009 N..... 20%
 Competitor, 102 P, 102 PN, 202 P,
 202 PN, 102 PR, 202 PR..... 20%
 304 P, 304 PN, 0304 P, 0304 PN, 334 P..... 20%

Registers—List July 1, 1903.

Japanned, Electroplated and
 Bronzed 70¢ @ 70¢ & 10%
 White Porcelain Enamel..... 50¢ @ 10%
 Solid Brass or Bronze Metal..... 40%

Revolvers—

Single Action..... 55¢ @ \$1.00
 Double Action, except 44 cal. \$2.00
 Double Action, 44 caliber..... \$2.00
 Automatic \$3.00
 Hammerless \$4.50

Riddles, Hardware Grade

16 in. per doz. \$2.50 @ \$2.75
 17 in. per doz. \$2.50 @ \$2.75
 18 in. per doz. \$3.00 @ \$3.25

Rings and Ringers—**Bull Rings—**

Steel 2 1/2 3 inch.
 Copper 1.25 1.65 doz.

Hog Rings and Ringers—

Hill's Rings, gro. boxes..... \$4.25
 Hill's Ringers, Gray Iron, doz. 60¢
 Hill's Ringers, Malleable Iron.....
 doz. 80¢
 Blair's Rings..... per gro. \$3.00
 Blair's Ringers..... per doz. 75¢
 Brown's Rings..... per gro. \$2.25
 Brown's Ringers..... per doz. 75¢

Rivets and Burrs—

Copper 40¢ @ 10% & 50%
 Carriage, Coopers', Tinnars, &c.:
 Black 70¢ @ 10%
 Metallic Tinned..... 70%

Bifurcated and Tubular—**Assorted in Boxes.**

Bifurcated, per doz. boxes, paste-
 board boxes, 50 count, 23¢ @ 25¢;
 Tin boxes, 100 count, 29¢ @ 32¢.
 Tubular, per doz. boxes, 50 count,
 29¢ @ 32¢; 100 count, 51¢ @ 58¢.

Rollers—

Cronk's Stay, No. 50..... \$1.00
 Cronk's Brinkerhoff No. 55, \$0.60;
 No. 56, \$0.75; No. 60..... \$0.75
 Lane's Stay..... 40%
 Richards' Stay:
 Handy Adj. and Reversible No. \$3.75
 O. K. Adj. and Reversible No. \$8.50
 Lag Screw, Nos. 55 and 57..... 50%
 Underwriters, Nos. 59, 60..... 50%
 Favorite, No. 54..... 60%

Rope—

Manila, 7-16 in. diam. and larger:
 Pure 1b., 11 1/2 @ 12¢
 Sisal, 7-16 in. diam. and larger:
 Pure 1b., 8¢
 Sisal, 7-16 in. diam. and larger:
 No. 2 quality..... 1b., 7¢ @ 7 1/2¢
 Sisal, Hay, Hide and Bale
 Ropes, Medium and Coarse:
 Mixed 1b., 7¢ @ 7 1/2¢
 Pure 1b., 9¢
 Sisal, Tarred, Medium Lath
 Yarn, Coarse and Untarred:
 Mixed 1b., 6 1/2¢ @ 6 3/4¢
 Pure 1b., 7 1/2¢
 Cotton Rope:
 Best, 1/4-in. and larger..... 18¢ @ 20¢
 Medium, 1/4-in. and larger..... 16¢ @ 17¢
 Common, 1/4-in. and larger..... 10¢
 In coils, 1/2¢ advance.
 Jute Rope:
 Thread, No. 1, 1/4-in. & up, 1b.,
 7 1/2¢ @ 8¢
 Thread, No. 2, 1/4-in. & up, 1b.,
 7¢ @ 7 1/2¢

Wire Rope—

Galvanized 57¢ @ 2 1/2¢
 Plain 45¢ @ 2 1/2¢

Ropes, Hammock—

Covert Mfg. Co.:
 Jute, 35%; Sisal..... 20%

Rules

Boxwood 60¢ @ 60¢ & 10%
 Ivory 35¢ @ 10¢ & 5%
 Chapin-Stephens Co.:
 Boxwood 60%
 Flexiford 40%
 Ivory 25¢ @ 25¢ & 10%
 Miscellaneous 50¢ @ 50¢ & 10%
 Stephens' Combination..... 55%
 Stationers' 50¢ @ 50¢ & 10%
 Kenfell & Esser Co.:
 Folding, Wood..... 35¢ @ 10%
 Folding, Steel..... 33¢ @ 10%
 Lufkin's Steel..... 50¢ @ 10%
 Lufkin's Lumber..... 50¢ @ 10%
 Union Nut Co.:
 Boxwood 60¢ @ 10%
 Ivory 35¢ @ 10¢ & 5%

Sash Balances—

See Balance, Saw.

Sash Locks—See Locks, Sash.**Sash Weights—**

Saws—

Atkins':	45%
Circular	50% to 10%
Band	50%
Butcher Saws	50%
Cross Cuts	50%
One-Man Cross Cut	50%
Narrow Cross Cut	50%
Hand, Rip and Panel	35% to 50%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	10% to 15%
Chapin-Stephens Co.:	
Turning Saws and Frames	30% to 30% to 10%
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	30% to 10% to 10%
Disston's:	
Circular	Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide	60%
Band, 1/4 to 1 1/2	40%
Crosscuts	45%
Narrow Crosscuts	50%
Mulay, Mill and Drag	50%
Framed Woodsaws	25%
Wood saw Blades	15%
Wood saws, Nos. 12, 9, 9, 16, d100	25%
D8, 120, 76, 7, 8	25%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1	30%
0, 00, Combination	30%
Compass, Key Hole, &c.	30%
Butcher Saws and Blades	30%
E. Jennings & Co.'s:	
Back Saws	16%
Butcher Saws	25% to 7 1/2%
Compass and Key Hole Saws	33% to 7 1/2%
Framed Wood Saws	25%
Hand Saws	12%
Wood Saw Blades	33% to 7 1/2%
Millers Falls:	
Butcher Saws	15% to 10%
Star Saw Blades	15% to 10%
Massachusetts Saw Works:	
Victor Kitchen Saws	40% to 10% to 50%
Butcher Saws and Blades	35% to 40%
Peace & Richardson's Hand Saws	30%
Simonds':	
Circular Saws	45%
Crecent Ground Cross Cut Saws	30%
One-Man Cross Cuts	40% to 10%
Gang Mill, Mulay and Drag Saws	45%
Band Saws	50%
Back Saws	25% to 25% to 7 1/2%
Butcher Saws	35% to 35% to 7 1/2%
Hand Saws	25% to 25% to 7 1/2%
Hand Saws, Bay State Brand	45%
Compass, Key Hole, &c.	25% to 25% to 7 1/2%
Wood Saws	40% to 7 1/2%
Wheeler, Madden & Clemon Mfg.	
Co.'s Cross Cut Saws	60%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A & A	25%
Disston's:	
Concave Blades	25%
Keystone Blades	30%
Hack S. Frames	30%
Simonds' File	35%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40% to 7 1/2%
Hack Saws, Nos. 175, 180, complete	40% to 7 1/2%
Goodell's Hack Saw Blades	40% to 10%
Griffin's Hack Saw Frames	35% to 10%
Griffin's Hack Saw Blades	35% to 10%
Star Hack Saws and Blades	15% to 10%
Sterling Hack Saw Blades	30% to 10% to 5%
Sterling Hack Saw Frames	30% to 10% to 5%
Sterling Power Hack Saws	15% to 10%
each, No. 1, \$25.00; No. 2, \$30.00	10%
Victor Hack Saw Blades	20%
Victor Hack Saw Frames	40%
Whitaker Mfg. Co.:	
National Hand Blades	40%
National Hand Frames	30% to 5%
National Power Blades	30% to 10%

Scroll—

Barnes, No. 7, \$15	25%
Barnes' Scroll Saw Blades	40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18	20%
with boring attachment, \$20	20%
Lester, complete, \$10	15% to 10%
Rogers, complete, \$3.50 and \$4.00	15% to 10%

Scales—

Family, Turnbull's	50% to 50% to 10%
Counter:	
Hatch, Platform, 1/2 oz. to 4 lbs.	50% to 50%
Two Platforms, 1/2 oz. to 8 lbs.	50% to 50%
Union Platform, Plain, \$1.70 to \$1.90	50% to 50%
Union Platform, Stpd, \$1.85 to \$2.15	50% to 50%
Chatillon's:	
Eureka	25%
Favorite	40%
Crocers' Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wag. on	50% to 10%

Scrapers—

Box, 1 Handle	50% to 50% to 25%
Box, 2 Handle	50% to 50% to 25%
Ship, Light, \$2.00; Heavy, \$4.50	50% to 50% to 25%
Chapin-Stephens Co. Foot	30% to 50% to 10%
Richards Mfg. Co. Foot	60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in.	\$2.50 to 4%
2 1/2, 1 1/2, \$3.00 to \$3.25; 1 1/4, \$3.50 to \$3.75	4%
Bench, Wood	20% to 20% to 10%
Hand, Wood	70% to 10% to 70% to 10%
Chapin-Stephens Co., Hand	70% to 10% to 2 1/2%

Coach, Lag and Hand Rail—

Lag, Cone Point	75% to 10% to 10%
Coach, Glnet Point	75% to 10% to 5%
Hand Rail	70% to 10% to 75%

Jack Screws—

Standard List	70% to 10% to 75%
Millers Falls	50% to 10% to 10%
Sweet Iron Works	70% to 75%

Machine—

Cut Thread, Iron, Brass or Bronze:	
Flat Head or Round Head	50% to 50% to 10%
Fuller Head	40% to 40% to 10%

Rolled Thread, F. H. or R. H.
Iron 75% to 10%
F. H. or R. H., Brass, Nos. 8 to 14 65% to 10%

Set and Cap—

Set (Iron)	75% to 10% to 7 1/2%
Set (Steel), net advance over Iron	25%
Sq. Hd. Cap	70% to 10% to 7 1/2%
Hex. Hd. Cap	70% to 10% to 7 1/2%
Rd. Hd. Cap	50% to 7 1/2%
Fuller Hd. Cap	60% to 7 1/2%

Wood—

List July 23, 1905:	
Flat Head, Iron	87% to 45% to 10%
Round Head, Iron	85% to 45% to 10%
Flat Head, Brass	80% to 45% to 10%
Round Head, Brass	77% to 45% to 10%
Flat Head, Bronze	75% to 45% to 10%
Round Head, Bronze	72% to 45% to 10%
Drive Screws	87% to 45% to 10%

Scroll Saws—

See Saws, Scroll.

Scythes—

Grass, No. 1, Plain	\$6.25 to \$6.75
Clipper, Bronzed Webb	\$6.50 to \$7.00
No. 3 Clipper, Pol'd Webb	\$6.75 to \$7.25
No. 6 Clipper and Solid Steel	\$7.00 to \$7.50
Bush, Weed and Bramble, No. 2	\$6.50 to \$7.00
Grain, No. 1	\$8.25 to \$8.75
Bronzed Webb, No. 1	\$9.50 to \$9.00
No. 3 and 4 Clipper, Grain	\$9.75 to \$9.25
Solid Steel, No. 6	\$9.25 to \$9.75

Seeders, Raisin—

Enterprise	25% to 30%
------------	------------

Sets—Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7	50%
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18; No. 10	20%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel	40% to doz sets \$9.00
-----------------------------------------------	------------------------

Sets, Nail—

Octagon	gro. \$3.50 to \$3.75
Huck Bros	27% to 4%
Cannon's Diamond Point	40% to 10%
Mayhew's	40% to 10%
Snell's Corrugated, Cup Pt.	40% to 10%
Snell's Knurled, Cup Pt.	40% to 10%
Victor Knurled Cup Pt.	40% to 10%

Rivet—

Regular List	75% to 75% to 10%
--------------	-------------------

Saw—

Atkins':	
Criterion	40%
Adjustable	40%
Disston's Star, Monarch and Triumph	30%
Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$20.00
No. 5, Mill	\$30.00
Nos. 10, 11, 95	\$15.00
No. 1 Old Style	\$10.00
Special	\$16.25
Giant Royal Cross Cut	40% to doz. \$9.00
Royal, Hand	40% to doz. \$4.50
Taintor Positive	40% to doz. \$4.75

Shaving—

Fox Shaving Sets, No. 30	40%
Smith & Hemenway Co.'s	75%

Sharpeners, Knife—

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	50%
Mounted Kitchen Sand Stone	15%
Natural Grit Carving Knife Hones	\$1.50
Hones, 4 doz.	\$3.00
Quick Cut Emery Carving Knife Hones, 4 doz.	\$1.50
Quick Edge Pocket Knife Hones, 4 doz.	\$2.50

Skate—

Smith & Hemenway Co., Eureka	50%
------------------------------	-----

Shaves, Spoke—

Iron	40% to \$1.10 to \$1.25
Wood	40% to \$1.75 to \$2.25
Bailey's (Stanley E. & L. Co.)	45%
Chapin-Stephens Co.	30% to 30% to 10%
Goodell's	40% to 40% to 15% to 10%

Shears—

Cast Iron	7 8 9 in.
Best	\$16.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.:	
Best quality Jap.	70% to 70% to 10%
Best quality, Nickel	60% to 60% to 10%
Tailors' Shears	40% to 40% to 10%
Acme Cast Shears	40% to 40% to 5%
Heinrich's Tailors' Shears	10%
Wilkinson Shear & Cutlery Co.:	
Sheep, 1900 list	30% to 10% to 5%
Grass	50% to 10%
Horse or Mule	50% to 10%

Tinners' Snips—

Steel Blades	20% to 45% to 10%
Steel Laid Blades	40% to 10% to 5%
Forged Handles, Steel Blades, Berlin	50%
Heinrich's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.	33% to 7 1/2%
Ningra Snips	40%
P. S. & W. Forged Handles	25%
W. R. W.	40% to 10%

Pruning Shears—

Cronk's Hand Shears	33% to 33% to 10%
Cronk's Wood Handle Shears	33% to 33% to 10%
Disston's Combined Pruning Hoe and Saw	\$18.00 25%
Disston's Pruning Hook only, 4 doz.	\$12.00 25%
John T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40% to 10%
Columbian Cutlery Co.:	
Hedge, Wilcut Brand	60% to 10%
Lawn and Border, Wilcut Brand	60% to 10%

Sheaves—Sliding Door—

Reading	40%
R. & E. list	15%

Sliding Shutter—

Reading list	40%
R. & E. list	10%

Shells—Shells, Empty—

Brass Shells, Empty:	
Climax, 10 and 12 gauge	65% to 10%
Club, Rival, 65% to 10%	60% to 5%
Paper Shells, Empty:	
New Rapid, 10, 12, 16 and 20 gauge	25% to 10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade	25% to 5%
Union, League, 12 and 12 gauge;	25% to 5%
Rival Grade	25% to 5%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge	20% to 5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade	20%

Shells, Loaded—

Loaded with Black Powder	40%
Loaded with Smokeless Powder, medium grade	40% to 5%
Loaded with Smokeless Powder, high grade	40% to 10% to 10%
Union Metallic Cartridge Co.:	
New Club, Black Powders	40%
Nitro Club, Smokeless Powders	40% to 5%
Arrow, Smokeless Powders	40% to 10% to 10%
Winchester:	
Smokeless Repeater Grade	40% to 5%
Smokeless Leader Grade	40% to 10% to 10%
Black Powder	40%

Shingles, Metal—Per Sq.

Edwards Mfg. Co.:	
Painted	Galv.
14 x 20	\$1.25 \$6.00
10 x 14	45% 6.25
7 x 10	47% 6.50
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$1.25 \$5.50
Dixie, 10 x 14 in.	4.50 6.00
Dixie, 7 x 10 in.	5.00 6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90

Shot—

25-lb. bag	
Drop, up to B	\$1.85
Drop, B and larger	2.10
Buck	2.10
Chilled	2.10
Dust	2.30

Shovels and Spades—

Association List, Nov. 15, 1902	40%
Avery Stamping Co.	40%

Snow Shovels—

Long Handle	\$3.25 to \$3.50
Wood and Mail, D. Handle	\$3.75 to \$4.00

Sieves and Sifters—

Hunter's Imitation	gro. \$9.50 to \$10.00
Hunter's Genuine	per gro. \$12.00 to \$12.50

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each	\$3.25
4 doz.	\$39.00

Sieves, Seamless Metallic

Mesh	14 16 18 20
Iron Wire	\$1.05 1.05 1.10 1.20
Tinned Wire	\$1.15 1.15 1.20 1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch	
Mesh 18, Nested	doz. \$0.90 to 0.95
Mesh 20, Nested	doz. \$1.00 to 1.05
Mesh 24, Nested	doz. \$1.30 to 1.40

Sinks, Cast Iron—

Painted, Standard List:	
12 x 12 to 22 x 36 in.	60%
20 x 40 to 24 x 50 in.	50%
24 x 60 to 24 x 120 in.	30%
Barnes' low list:	
Up to and including 20 x 36 in.	50% to 5%
20 x 40 to 24 x 50 in.	45%
NOTE.—There is not entire uniformity in lists used by jobbers.	

Skains, Wagon—

Cast Iron	70% to 75% to 10%
Steel	40% to 45%

Slates, School—

Factory Shipments:	
"D" Slates	\$6.45 to \$6.10 to 10%
Eureka, Unexcelled Noiseless	
Victor A, Noiseless	60% to 45% to 5%

Slaw Cutters—See Cutters.**Snaps, Harness—**

German	40% to 40% to 10%
Covert Mfg. Co.:	
Derby, 25%; Yankee, 30% to 2%; Yankee Roller, 30% to 2%	
High Grade, 40%; Trojan	40%
Jockey	25%

Snaths—

Scythe	55% to 60%
--------	------------

Snips, Tinners—See Shears.**Spoons and Forks—****Silver Plated—**

Good Quality	50% to 10% to 60% to 5%
Cheap	60% to 60% to 10%
International Silver Co.:	
1847 Rogers Bros., 40% to 10%; Rogers & Hamilton	30% to 10%
Rogers & Bro., William Rogers	30% to 10%
Eagle Brand	20% to 10%
Anchor, Rogers Brand	60%
Wm. Rogers & Son	60% to 10%

Miscellaneous

